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CHAPTERS OF THE

MUNICIPAL CODE OF CHICAGO

Revised and Edited by

BARNET HODES, Corporation Counsel

RELATING TO

BUILDINGS

Planographed reprint of
Chapters 13, 39 to 81, 84, 85 and 89,
with amendments to July 1, 1941

Printed by order of the City Council

HON. EDWARD J. KELLY, Mayor

RICHARD E. SCHMIDT
Commissioner of Buildings

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43rd	Mathias Bauler, 1648 N. Sedgwick St.	Rand. 8000, Ext. 400
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48th	Robert C. Quirk, 1105 W. Lawrence Ave.	Longbeach 3260
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Notes:

With the following exceptions, this pamphlet contains all of the chapters in Part V of the Municipal Code of Chicago entitled "Buildings":

1. The plumbing ordinances, including Chapters 82, 83 and 162 of the Municipal Code. (printed separately)

2. Chapters 86, 87 and 88 of the Municipal Code, relating to the enforcement of electrical regulations, general standards of electrical installation, and electrical equipment for specific uses. (printed separately)

3. The fire prevention ordinances, including Chapters 90, 91 and 92 of the Municipal Code, relating to fire protection, standard sprinkler systems, and standard inside standpipe systems. (to be printed separately)

CHAPTER 13

DEPARTMENT OF BUILDINGS

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Organization

13-1. There is hereby established an executive department of the municipal government of the city which shall be known as the department of buildings, and which shall embrace a commissioner of buildings, a deputy commissioner of buildings, a building inspector in charge, an elevator inspector in charge, a plumbing inspector in charge, a secretary of the department of buildings, a private secretary to the commissioner of buildings and such number of assistant building inspectors in charge, building inspectors, elevator inspectors, fire escape inspectors, supervising plumbing inspectors, plumbing inspectors, plumbing plan examiners and other officers, assistants and employes as may be provided for in the annual appropriation ordinance. The offices enumerated above are hereby created, and the incumbents of these offices shall be known and designated by their respective titles as herein set forth. [Amend. Coun. J. 1-27-41, p. 4051.]

13-2. The commissioner of buildings shall be the head of said department of buildings and shall be a registered architect, or a registered structural engineer, and shall have been engaged as an architect, or a structural engineer for a period of not less than ten years prior to his appointment. During his term of office as commissioner of buildings he shall not be engaged in any other business. He shall be appointed by the mayor, by and with the advice and consent of the city council. The commissioner may require the officers and employes of the department of buildings to perform such duties, in addition to those herein prescribed, as he may deem necessary.

13-3. The deputy commissioner of buildings shall be appointed by the commissioner of buildings according to law. The person certified to fill this office shall be either a civil, structural, or architectural engineer, or an architect, an experienced building contractor, or an efficient building mechanic with at least five years' experience and training.

The deputy commissioner of buildings shall act as commissioner of buildings in the absence of the commissioner of buildings from his office, and while so acting shall discharge all the duties and possess all the powers imposed upon or vested in the commissioner of buildings. The deputy commissioner of buildings shall, under the direction of the commissioner of buildings, have general control of all matters and things pertaining to the work of the department of buildings.

13-4. The building inspector in charge shall be appointed by the commissioner of buildings according to law. The person certified to fill this position shall be a civil, structural, architectural, or fire protection engineer, or an architect, or building superintendent, or a building mechanic, with at least five years' experience in general building construction.

In the absence of the commissioner of buildings and the deputy commissioner of buildings from their offices, the building inspector in charge shall act as commissioner of buildings and while so acting he shall discharge all of the duties and possess all of the powers imposed upon or vested in the commissioner of buildings. He also shall have immediate charge of the investigation of complaints and of the periodical inspection of buildings and structures being erected, enlarged, altered or repaired, excepting only such inspection as is expressly assigned to the elevator or fire escape inspectors or as by law assigned to some other department of the city government.

13-5. The commissioner of buildings shall appoint, according to law, at least four assistant building inspectors in charge. Every person certified to fill the position of assistant building inspector in charge shall be a civil, structural, architectural, or fire protection engineer, or an architect, a building superintendent, or a building mechanic, with at least five years' experience in general building construction.

The assistant building inspectors in charge shall have immediate charge of the several districts assigned to them by the commissioner of buildings.

13-6. The commissioner of buildings shall appoint, according to law, such building inspectors as may be provided for by the city council. Every person certified to fill the position of building inspector shall be a civil, structural, architectural, or fire protection engineer, or an architect, or a building superintendent or a building mechanic, with at least five years' experience in general building construction.

The building inspectors shall, under the direction of the building inspector in charge, examine all buildings and structures in the course of erection, enlargement, alteration, repair, or removal, as often as is required for efficient supervision, and shall make such periodical examinations of existing structures as shall be assigned to them. They shall examine all buildings, structures and walls reported to be in dangerous condition. They shall examine all buildings and other structures for the enlargement, alteration, raising, or removing of which application for permit shall be made. Every building inspector shall make written reports daily to the commissioner of buildings as to the condition in which he found each building examined and as to violations, if any, of the provisions of this code which the commissioner of buildings is required to enforce, together with the street and number of the premises where such violations, if any, were found, the names of the owner, agent, lessee and occupant thereof, and of the architect and contractor engaged in and about the work in question.

13-7. The commissioner of buildings shall appoint, according to law, an elevator inspector in charge, an assistant elevator inspector in charge and such other elevator inspectors as may be provided for by the city council. The person certified to fill the position of elevator inspector in charge shall be a graduate in engineering from a recognized technical school, shall be versed in the principles of both mechanical and electrical engineering, and shall have had at least five years' experience in design or construction work. The person certified to fill the position of assistant elevator inspector in charge shall be well versed in the principles of both mechanical and electrical engineering and shall have had at least five years' experience in design, construction or inspection work. Every person certified to fill the position of elevator inspector shall be a mechanical engineer, machinist, or elevator mechanic, well versed in the principles of mechanical and electrical construction.

The elevator inspector in charge, under the direction of the commissioner of buildings, shall examine and approve all drawings for the installation of all elevators, mechanical equipment used for the raising or lowering of any proscenium fire curtain, or stage orchestra floor, or any platform, dumbwaiter, escalator, and mechanical amusement device. No such elevator, dumbwaiter, escalator, mechanical equipment, device, or apparatus shall be installed, nor shall any such equipment be operated without the approval of the elevator inspector in charge. The elevator inspector in charge shall cause such inspection to be made of all new installations as may be necessary to insure construction in accordance with the drawings approved by him. He shall cause such periodic inspections to be made of existing installations of such equipment as may be necessary to insure safe maintenance of this equipment and as required by this code. The assistant elevator inspector in charge shall perform all the duties of the elevator inspector in charge during his absence, and such other duties as are assigned to him by the elevator inspector in charge. The elevator inspectors shall inspect all elevators, mechanical equipment used for the raising or lowering of any proscenium fire curtain, or stage, orchestra floor, or any platform, dumbwaiter, escalator, and mechanical amusement device as shall be assigned to them by the elevator inspector in charge.

The elevator inspectors shall make written reports daily to the commissioner of buildings as to the condition in which they find the proscenium fire curtains, elevators, dumbwaiters, escalators, mechanical equipment, devices, and apparatus inspected by them, and of any violations of the requirements of this code pertaining to such matters, together with the street and number of the premises where such violations occur, the names of the owner, agent, lessee, and occupant thereof, and if a new installation, the names of the architect, or engineer, and contractor engaged in or about the construction and installation of such equipment.

13-7.1. The commissioner of buildings shall appoint, according to law, a plumbing inspector in charge. The person certified to fill the position of plumbing inspector in charge shall be a licensed plumber. The plumbing inspector in charge, under the direction of the commissioner of buildings, shall have charge of the approval of all drawings and plans for the installation of plumbing and drainage in buildings, the inspection of plumbing and drainage of plumbing in buildings and the enforcement of all provisions of this code affecting plumbing and drainage not otherwise by law required to be enforced by other departments. [Added Coun. J. 1-27-41, p. 4051.]

13-8. The commissioner of buildings shall appoint, according to law, one or more structural engineers and such other engineers and assistants as the city council may by ordinance provide for service on the engineering staff of the department of buildings. Every person certified to fill the position of structural engineer shall be a civil, structural, or architectural engineer of at least five years' training and experience.

The structural engineers shall, under the direction of the commissioner of buildings, examine all plans submitted for the purpose of obtaining a permit. They shall also examine and verify the figures on all applications for and on all floor load placards before such placards are approved for posting.

13-9. The secretary of the department of buildings and the private secretary to the commissioner of buildings shall be appointed according to law.

The secretary of the department of buildings shall, under the supervision and direction of the commissioner of buildings, preserve and keep all books, records, and papers belonging to the office of the department of buildings, or which are required by law to be filed therein. He shall perform such other duties as may be required of him by the commissioner of buildings.

The private secretary to the commissioner of buildings shall have charge of the correspondence of the office of the commissioner of buildings.

13-10. Every employe in the department of buildings shall devote his entire time to such employment, and shall not be engaged in any other business or vocation.

Commissioner of Buildings

13-11. The commissioner of buildings shall institute such measures and prescribe such rules and regulations for the control and guidance of his subordinate officers and employes as shall secure the careful inspection of all buildings while in the process of construction, alteration, repair, or removal and the strict enforcement of the several provisions of this code relating to buildings. It shall be the duty of the commissioner of buildings to administer and enforce the provisions of this code that relate to the erection, construction, alteration, repair, removal and safety of buildings and the use of buildings and premises with the exception of those provisions which by their terms are to be under the direct and immediate supervision of the board of health or of the bureau of fire prevention, or of such other departments or officers of the city designated by such code provisions.

13-12. In all cases where any action is taken by the commissioner of buildings to enforce the provisions of this code, whether such action is taken in pursuance of the express provisions of a particular section or in a case where discretionary power is given by this code to the commissioner of buildings, such acts shall be done in the name of and on behalf of the city, and the said commissioner of buildings in so acting for the city shall not render himself liable personally, and he is hereby relieved from all personal liability for any damage that may accrue to persons or property as a result of any such act committed in good faith in the discharge of his duties, and any suit brought against the said commissioner of buildings by reason thereof shall be defended by the corporation counsel of said city until the final termination of the proceedings therein.

13-13. The commissioner of buildings shall have full power to pass upon any question arising under any of the provisions relating to buildings contained in this code, subject to the conditions, modifications, and limitations contained therein.

13-14. In all cases where discretionary power is given to the commissioner of buildings to estimate damage to buildings, as also in questions relating to the security of any building or buildings, or structures, or parts thereof, and in all other cases where discretionary powers are given by this code to the commissioner of buildings, any party or parties believing themselves injured or wronged by any decision of the commissioner of buildings may, before instituting any suit, make an appeal for arbitration as provided by this chapter.

13-15. Any person wishing to make an appeal shall do so within five days' time after written notice of the decision or order of the commissioner of buildings has been given. An appeal made later than five days after the serving of the notice of the commissioner of buildings shall not entitle the appellant to any arbitration. The request for arbitration shall be in writing and shall state the object of the proposed arbitration and the name of the person who is to represent the appellant as arbitrator.

13-16. The commissioner of buildings shall thereupon inform the appellant of the cost of such arbitration and such appellant shall, within twenty-four hours from the receipt of such information, deposit with the commissioner of buildings the sum of money requested for defraying the expense of the same, which sum shall be fixed in each case by said commissioner in proportion to the time it will take and the difficulty and importance of the case, but shall in no case be more than the cost of similar service in the course of ordinary business of private individuals or corporations. As soon as such sum of money shall have been deposited with him, the commissioner of buildings shall appoint an arbitrator to represent the city and the two arbitrators thus chosen shall, if they cannot agree, select a third arbitrator, and the decision of any two of these arbitrators, after investigation and consideration of the matter in question, shall be final and binding upon the appellant as well as the city unless an appeal is taken therefrom, as provided in case of an appeal under a statutory arbitration, within five days thereafter.

13-17. The arbitrators shall themselves, before entering upon the discharge of their duties, be placed under oath by the city clerk, to the effect that they are unprejudiced as to the matter in question and that they will faithfully discharge the duties of their position. They shall have the power to call witnesses and place them under oath, and their decision or award shall be rendered in writing both to the commissioner of buildings and to the appellant. The fee deposited by the appellant with the commissioner of buildings shall be paid by the commissioner of buildings to the arbitrators upon the rendering of their report and shall be in full of all costs incident to the arbitration; but should the decision of said board of arbitration be rendered against the commissioner of buildings, then the money deposited by the aforesaid appellant shall be returned to him and the entire cost of such arbitration shall be paid by the city.

13-18. The commissioner of buildings may adopt reasonable rules not inconsistent with this code, to determine the quality of materials and workmanship in building construction and equipment and in the repair thereof, provided that any standards adopted by such rules shall be according to the practice, custom and usage prevailing in the industry involved. Copies of said rules shall be published and shall be kept always on file in the office of the commissioner of buildings. Copies of all such rules so adopted shall be transmitted to the city council at the first regular meeting held after adoption of same.

13-19. It shall be the duty of the commissioner of buildings where any citizen represents that any building or structure, or part thereof, is in an unsafe or dangerous condition, or that the stairways, corridors, exits, or fire escapes in any factory or workshop or other place of employment are insufficient for the escape of employes in case of fire, panic or accident, or that the stairways, exits, and fire escapes of any building or structure in the city do not comply with the requirements of this code to make an examination of such building or structure. If such representation is found to be true, the said commissioner shall give notice in writing to the owner, occupant, lessee, or person in possession, charge, or control of such building or structure to make such changes, alterations, or repairs as safety, or the provisions of this code, may require. It shall be unlawful to continue the use of such buildings until the changes, alterations, or repairs found necessary by the commissioner of buildings to make such building or structure, or part thereof, safe or to bring it into compliance with the provisions of this code shall have been made. Upon failure of parties so notified to comply with the requirements of said notice, the matter shall be turned over to the corporation counsel for prosecution.

13-20. The commissioner of buildings and his assistants shall pass upon all questions relating to the strength and durability of buildings or structures and shall examine and approve all plans before a permit is issued for the construction of any building or structure.

13-21. The commissioner of buildings and his assistants are empowered to enter any building, structure, or premises, whether completed or in process of erection, for the purpose of determining whether the same has been or is being constructed, maintained, and used in accordance with the provisions of this code, and it shall be unlawful to exclude them from any such building, structure, or premises.

13-22. Whenever the commissioner of buildings shall find any building or structure, or part thereof in the city in such an unsafe condition as to endanger life, but in such condition that by the immediate application of precautionary measures such danger may be averted, he shall have authority, and it shall be his duty, to forthwith notify in writing, the owner, agent, or person in possession, charge, or control of such building or structure, or part thereof, to adopt and put into effect such precautionary measures as may be necessary or advisable in order to place such building or structure, or part thereof, in a safe condition. Such notice shall state briefly the nature of the work required to be done and shall specify the time within which the work so required to be done shall be completed by the person notified, which shall be fixed by said commissioner of buildings, upon taking into consideration, the condition of such building or structure, or part thereof, and the danger to life or property which may result from its unsafe condition.

Whenever the commissioner of buildings shall be unable to find the owner of such building or structure, or part thereof, or any agent or person in possession, charge, or control thereof, upon whom such notice may be served, he shall address, stamp and mail such notice to such person or persons at his or their last known address, and in addition thereto shall place or cause to be placed the notice herein provided for upon such building or structure at or near its principal entrance and shall also post or cause to be posted in a conspicuous place at each entrance to such building in letters not less than two inches high, a notice as follows:

> "THIS BUILDING IS IN DANGEROUS CONDITION AND ITS USE OR OCCUPANCY HAS BEEN PROHIBITED BY THE COMMISSIONER OF BUILDINGS."

It shall be unlawful for any person to remove said notice or notices without written permission from the commissioner of buildings.

13-23. If, at the expiration of the time specified in such notice for the completion of the work required to be done by the terms of such notice in order to render the building or structure safe, said notice shall not have been complied with, and said building or structure is in such an unsafe condition as to endanger life or property, it shall be the duty of the commissioner of buildings to direct the commissioner of public works to proceed forthwith to tear down or destroy that part of said building or structure that is in such unsafe condition as to endanger life or property. In cases where an unsafe building or structure cannot be repaired or rendered safe by the application of precautionary measures, such building or structure, or the dangerous parts thereof, shall, on the order of the said commissioner of buildings, be torn down by the commissioner of public works. The expense of tearing down any part of such building or structure shall be charged to the person owning or in possession, charge or control of such building, or structure, or part thereof, and the said commissioner of buildings shall recover or cause to be recovered from such owner or person in possession, charge, or control thereof the cost of doing such work, by legal proceedings prosecuted by the corporation counsel. If the owner, agent, or person in possession, charge, or control of such building or structure, or part thereof, when so notified shall fail, neglect, or refuse to place such building or structure, or part thereof, in a safe condition, and to adopt such precautionary measures as shall have been specified by said commissioner within the time specified in such notice, in such case, at the expiration of such time it shall be unlawful for any person to occupy or use said building or structure, or part thereof, until said building or structure, or part thereof, is placed in a safe condition; and where a building or structure, or part thereof, is in a dangerous or unsafe condition and has not been placed in a safe condition within the time specified in the notice of the commissioner of buildings, such building or structure, or such part thereof, shall be forthwith vacated, and it shall be unlawful for any person to enter same except for the purpose of making repairs required by the commissioner of buildings and the provisions of this code.

Whenever the decision of the commissioner of buildings upon the safety of any building, or structure, or part thereof, is made in a case which in his opinion is so urgent that failure to properly carry out his orders to demolish or strengthen such building or structure, or part thereof, may endanger life and limb, the decision and order of the commissioner of buildings shall be absolute and final.

13-24. Whenever it shall be found that any building or structure, or part thereof, is being, or shall have been constructed or built in violation of any of the provisions of this code which it is his duty to enforce, the commissioner of buildings shall forthwith notify the owner, agent, architect, and the contractor engaged in erecting such building or structure, or part thereof, of the fact that such building or structure, or part thereof, has been or is being constructed or erected contrary to the provisions of said code and shall specify briefly in such notice in what manner the said provisions have been violated, and shall require the person so notified forthwith to make such building or structure, or part thereof, conform to and comply with the said provisions, specifying in such notice the time within which such work shall be done.

If, at the expiration of the time set forth in such notice, the person so notified shall have refused, neglected, or failed to comply with the requirements made in such notice to have such building or structure, or part thereof, concerning which notice was sent, changed so as to conform to and comply with the provisions of this code concerning buildings, the commissioner of buildings shall have the authority, and it shall be his duty, to direct the commissioner of public works to proceed forthwith to tear down such building or structure, or such part thereof, as shall be or may have been erected and constructed in violation of any of the provisions of this code, and the cost of such work shall be charged to and be recovered from the owner of such building or from the person for whom such building or structure is being erected, in legal proceedings prosecuted by the corporation counsel.

The commissioner of buildings shall have authority to direct the commissioner of public works to tear down any defective or dangerous wall or structure or any building or structure, or part thereof, which may be constructed in violation of the provisions of this code concerning buildings, after written notice has been served upon the owner, lessee, occupant, agent, or person in possession, charge or control, directing them or him to tear down or remove any defective wall, building or structure, or any part thereof, which is in a dangerous condition, or which has been or is being constructed or maintained in violation of the provisions of this code. In case of the destruction or partial destruction of buildings by fire, decay, or otherwise, when any department of the city government, pursuant to ordinance, shall make an outlay of money or incur any liability for the payment of any expense on behalf of the city in an effort to preserve or prevent the destruction of such building or buildings, or structure, or for the preservation of life of its citizens, it shall be the duty of the commissioner of buildings to ascertain the amount of such outlay or expenditure and present a bill therefor to the owner or owners of any such building or buildings, or its or their agent or agents, and it shall be the duty of the said commissioner of buildings to refuse to issue a permit for the construction, reconstruction, alteration, or repair of any building or buildings or structure by any such owner or owners, lessee, occupant, agent, or person in possession, charge, or control thereof until such outlay or expenditure shall be repaid to the city by the owner, lessee, occupant, agent or person in possession, charge, or control of such building or buildings thus totally or partially destroyed in the manner aforesaid. Said commissioner shall also proceed forthwith to collect the amount of such bill from such owner or owners by legal proceedings prosecuted by the corporation counsel.

13-25. The commissioner of buildings shall have power to stop the construction of any building, or the making of any alterations or repairs of any building within the city when the same is being done in a reckless or careless manner, or with defective material, or if incompetent workmen are employed thereon and performing the work in a manner not in conformity with the practice, custom, and usage prevailing in the various branches of the building industry, such as failing properly and securely to assemble, join, and erect any materials used in the construction, alteration, or repair of any building, or in violation of this code, and to order, in writing or orally, any and all persons in any way or manner whatever engaged in so constructing, altering, or repairing any such building, to stop and desist therefrom.

The commissioner of buildings shall also have power to stop the wrecking or tearing down of any building or structure, or part thereof, within the city when the same is being done in a reckless or careless manner or in violation of any provisions of this code or in such a manner as to endanger life or property, and to order any and all persons engaged in said work to stop and desist therefrom. When such work has been stopped by the order of said commissioner, it shall not be resumed until said commissioner shall be satisfied that adequate precautions will be taken for the protection of life and property, and that said work will be prosecuted carefully and in conformity with the provisions of this code.

13-26. The commissioner of buildings shall sign, or cause to be signed, all certificates and notices required to be issued from the department of buildings and shall keep a record of the same, and shall issue, or cause to be issued, all permits authorized by this code.

13-27. The commissioner of buildings shall also keep a proper record of all transactions and operations of the department and such record shall be at all times open to the inspection of the mayor, comptroller, commissioner of police, chief fire marshal and members of the city council. The commissioner of buildings shall keep in proper books for that purpose an accurate account of all fees charged, giving the name of the person to whom same is charged, the date on which said charge is made, and the amount of each such fee. The commissioner of buildings shall cause a complete record to be kept showing the location and character of every building or other structure for which a permit is issued, and shall cause to be filed every report of inspection, which reports shall bear the signatures of the inspectors making such inspections. He shall cause a record to be kept of all complaints of violations of the building provisions of this code.

13-28. The commissioner of buildings shall prepare each day a report of the permits issued on the previous day, giving all the necessary information contained in same, including the legal description, when given, and the value of the building to be constructed or altered. He shall file one copy of this report with the Cook county assessor, one copy with the board of appeals of Cook county, and one copy with the corporation counsel.

13-29. Whenever it shall be necessary, in the opinion of the commissioner of buildings, to call upon the department of police for aid or assistance in carrying out or enforcing any of the provisions of this code which it is his duty to enforce, he shall have the authority to do so, and it shall be the duty of the commissioner of police, or of any member of the department of police, when called upon by said commissioner of buildings to act according to the instructions of, and to perform such duties as may be required by said commissioner of buildings in order to enforce or put into effect the said provisions of this code that it is his duty to enforce.

CHAPTER 39

ENFORCEMENT OF BUILDING REGULATIONS

39-1. Interpretation of provisions
39-2. Precedence of chapter provisions
39-3. Power of entry
39-4. Rules
39-5. Revocation of licenses
39-6. Closing buildings or premises
39-7. Nuisances
39-8. Penalty

39-1. The chapters of this code pertaining to buildings from 39 to 85, inclusive, and also chapter 89, shall be referred to as the building provisions of this code. In interpreting and applying the building provisions of this code such provisions shall in every instance be held to be the minimum requirements adopted for the promotion of the public health, safety, comfort, or welfare.

39-2. The general provisions of chapters 61 to 69 inclusive, shall be referred to in this code as the general provisions of this code pertaining to buildings. All other chapters of the building provisions of this code, except those dealing with specific occupancies, shall be referred to as the structural provisions of this code pertaining to buildings.

The general provisions shall govern the construction, alteration, and conversion of all buildings and other structures, except as modified or enhanced by special provisions contained in other chapters in the building provisions of this code.

In the case of any conflict between a general provision and a special provision in the building provisions of this code, as above enumerated, the special provision shall govern.

39-3. The commissioner of buildings, president of the board of health, fire commissioner, commissioner of public works, commissioner of streets and electricity, commissioner of police, or any of them and their respective assistants, shall have the right to enter any building, or premises, and any and all parts thereof, at any reasonable time, and at any time when occupied by the public in order to examine such buildings or premises to judge of the condition of the same and to discharge their respective duties, and it shall be unlawful for any person to interfere with them in the performance of their duties.

39-4. The board of health and the commissioner of public works may adopt reasonable rules not inconsistent with chapters 81 and 82, to determine the quality of materials and workmanship in plumbing construction and equipment and in the repair thereof; provided, however, that any standards adopted by such rules shall be according to the practice, custom, and usage prevailing in the plumbing industry. The commissioner of buildings may adopt reasonable rules to determine the quality of materials and workmanship in the construction of ventilating systems for buildings and premises; provided, however, that any standards adopted by such rules shall be according to the practice, custom and usage prevailing in the ventilating industry. Copies of said rules shall be published and shall be kept always on file in the offices of the board of health, the commissioner of public works, and the commissioner of buildings. The board of health, the commissioner of public works, and the commissioner of buildings shall publish in convenient form and as a unit the parts of the building provisions of this code coming within their jurisdiction and the rules pertaining to ventilating, plumbing, and drainage which such departments may have adopted and approved. Copies of all such rules so adopted shall be transmitted to the city council at the first regular meeting held after the adoption of the same.

39-5. Upon a report to the mayor by the commissioner of buildings, president of the board of health, fire commissioner, commissioner of public works, commissioner of streets and electricity, or the commissioner of police that any requirements of the building provisions of this code, or that any order given by them, or any of them in regard thereto, has been violated, or not complied with, the mayor shall revoke the license of any such business, or occupation of any such building so reported and cause the same to be closed.

39-6. The commissioner of buildings, president of the board of health, fire commissioner, commissioner of public works, commissioner of streets and electricity, commissioner of police, or any one of them, shall have the power, and it shall be their joint and several duty, to order any building or premises closed, where it is discovered that there is any violation of any of the building provisions of this code, and to keep same closed until such provisions are complied with.

39-7. Every building or structure constructed or maintained in violation of any of the building provisions of this code, or which is in an unsanitary condition, or in an unsafe or dangerous condition, or which in any manner endangers the health or safety of any person or persons, is hereby declared to be a public nuisance. Every building or part thereof which is in an unsanitary condition by reason of the basement or cellar being damp or wet, or by reason of the floor of such basement or cellar being covered with stagnant water, or by reason of the presence of sewer gas, or by reason of any portion of a building being infected with disease or being unfit for human habitation, or which, by reason of any other unsanitary condition, is a source of sickness, or which endangers the public health, is hereby declared to be a public nuisance.

39-8. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 40

BUILDING DEFINITIONS AND CLASSIFICATIONS

40- 1. Definitions

Building classifications

40- 2. Scope of application
40- 3. Single dwellings
40- 4. Multiple dwellings
40- 5. Institutional buildings
40- 6. Business units
40- 7. Office units
40- 8. Financial units
40- 9. Sales units
40-10. Storage units
40-11. Manufacturing units
40-12. Hazardous use units
40-13. Garage buildings
40-14. Theater buildings
40-15. Open air assembly units
40-16. Public assembly units
40-17. Church buildings
40-18. School buildings
40-19. Other buildings and structures

40-1. For the purposes of the building provisions of this code, wherever the following words, terms, or phrases occur either therein or in any application, certificate, drawing, permit, plan, or specification submitted for the purpose of obtaining a building permit, the definition herein given shall be deemed to be the meaning of such words, terms, or phrases, except where otherwise expressly stated.

Addition. Any construction which increases the area or cubic content of a building or structure.

Aisle. A passageway between rows of seats, or between rows of seats and a wall in an assembly room or auditorium, or between desks, tables, counters, or other materials, or between such articles or materials and a wall in other rooms or spaces. *Longitudinal aisle.* In an assembly room or auditorium, an aisle approximately perpendicular to the rows of seats served thereby. *Transverse aisle.* In an assembly room or auditorium, an aisle approximately parallel to the rows of seats.

Alcove. A recess adjoining and connected with a larger room, with an unobstructed opening into such room equal in area to not less than twenty per cent of the entire wall area of the alcove.

Alley. A narrow thoroughfare upon which abut generally the rear of premises, or upon which service entrances of buildings abut, and not generally used as a thoroughfare by both pedestrians and vehicles, or which is not used for general traffic circulation, or which is not in excess of thirty feet wide at its intersection with a street.

Alteration. Any change or modification of construction or space arrangement in an existing building or structure not increasing the area or cubic content thereof. Any change which decreases the area or cubic content of a building.

Amphitheater, Teaching. See *Teaching amphitheater.*

Apartment. A dwelling unit containing a kitchen or kitchenette or any equipment or facilities for the heating, cooling, preserving, or serving of food in a multiple dwelling or in a multiple use building.

Apartment house. A multiple dwelling or that part of a building containing two or more apartments having a common entrance.

Area. A particular extent of any surface, except as otherwise defined or qualified. *Building area.* The maximum horizontal projected area of the building at grade. *Floor area.* The area of a floor within the inclosing walls of a building excepting space occupied by walls, columns, stairs, elevator shafts, well holes, chimneys, courts, and pipe, wire or vent shafts. *Net floor area.* A floor area, as defined above, less also the area of lobbies, inclosed corridors and other inclosed means of exit, toilet rooms, janitors' closets, and vaults.

Assembly room. A room arranged, used, or intended to be used by a group of persons assembled for any purpose other than for a regular business or dwelling.

A. S. T. M. Abbreviation for American Society for Testing Materials.

Basement. A story below the first story in a building having no ground story, or below the ground story in a building in which a ground story is included. In a building having more than one basement, the story immediately below the first story or ground story shall be defined as "Basement," the story next lower "Basement B", and so on for the full number of basements which the building contains.

Bathroom. A room containing a tub, shower compartment, or other facilities for bathing.

Building. When separated by standard fire division walls each unit so separated shall be deemed a separate building.

Ceiling. The undersurface of the overhead covering of a room.

Cellar. A basement story more than one-half below the grade.

Class room. A room used for the instruction of or recitation by students in groups.

Closet. A non-habitable room used for storage.

Convent. A building occupied by nuns as a place of residence.

Converted. Changed from one class of occupancy to another class.

Corner lot. See *Lot.*

Court. An open, unobstructed and uncovered space other than a yard, on the same lot with a building. *Lot line court.* A court bounded on one side by a lot line and on its remaining sides by the walls of a building or another lot line or lot lines. *Inner court.* A court entirely surrounded by the walls of a building. *Open lot line court.* A lot line court open at one end, for the required dimensions of the court, to a street, alley, or yard. *Outer court.* A court bounded by the walls of a building on all sides but one which shall be open, for the required dimensions of the court, to a street, alley, yard, or through court. *Through court.* A court between a lot line and a building, extending from a street at one end to a street, alley, or yard at the other end.

Curb grade. Elevation of the curb as fixed by city ordinances.*

Face. A wall surface of any other plane shall be considered to face a line or another plane when it makes an angle of less than forty-five degrees.

Family. One or more persons living, sleeping, cooking, and eating on the premises as a single housekeeping unit.

First story. The lowest story having a floor, every point of which shall be not more than one foot below the established inside grade, except as otherwise provided in chapters 47 to 58 inclusive.

Grade. The finished grade of improved premises is the elevation of the surface of the ground adjoining the building. The established grade of premises, whether vacant or improved, is the elevation of the sidewalk at the property line as fixed by city ordinances.* On a two level thoroughfare, grade shall be taken at the upper level except as otherwise expressly provided.

Grand stand. A structure containing tiers of seats, with or without roof or walls, used for viewing open air games or spectacles.

Ground story. A story immediately below the first story on premises abutting an existing or proposed and authorized two level thoroughfare, the lowest point of the floor of which shall be not more than one foot below the lowest established grade unless otherwise provided.

Habitable room. Any room complying with the building provisions of this code, in which persons sleep, eat, or carry on their usual business, domestic, or social vocations, except private laundries, bathrooms, toilet rooms, pantries, closets, corridors, rooms for mechanical equipment, and spaces used for service and utilities.

Hotel. A building or structure kept, used, or maintained as, or advertised, or held out to the public to be an inn, family hotel, apartment hotel, lodging house, dormitory, or place where sleeping or rooming accommodations are furnished for hire or rent, whether with or without meals, in which five or more sleeping rooms are used and maintained for the accommodation of guests, lodgers, or roomers.

Kitchen. A space where food is prepared.

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* Copies of these ordinances are on file in the city clerk's office.

Locker room. A room designed, intended, or used for the accommodation of lockers for the storage of goods or wearing apparel, with or without provisions for changing apparel.

Lot. A parcel of land or premises occupied or which it is intended shall be occupied by one building with its usual auxiliary buildings or uses customarily incident thereto, including such open spaces as are required by the building provisions of this code and such open spaces as are arranged and designed to be used in connection with such building. *Corner lot.* A lot which abuts upon two streets making an angle on the lot side, at their intersection, of one hundred twenty degrees or less. *Front of lot.* The shortest street frontage. *Rear of lot.* The boundary opposite the front of the lot as herein defined.

Lot line. A boundary line between a lot and an adjoining lot.

Mezzanine. A partial floor used for the same purposes as the floor below, having at least one side open into the story containing such mezzanine, and having an area not to exceed twenty per cent of the area of the floor of the containing story.

Monastery. A building occupied by monks as a place of residence.

Owner. The owner or owners of the freehold of the premises or of a lesser estate therein, a vendee in possession, or the lessee or joint lessees of the whole thereof.

Pantry. A space accessory to a dining room or kitchen, for the storage of food, dishes, and utensils.

Partition. A vertical separating construction extending from floor to ceiling.

Principal entrance. That entrance from a street, alley, or other open space serving as a way of approach to a building, to which is apportioned the greater aggregate of the required outside exit doorway width.

Proscenium. The vertical plane of separation between an auditorium and a stage.

Public hall. A hall, corridor, or passageway within a building for the common use of its occupants.

Purlin. A roof beam.

Repair. The renewal or reconstruction of any part of a building or other structure for the purpose of its maintenance, which does not increase the area or cubic content of a building or other structure.

Row of seats. A group of adjoining seats arranged side by side.

Shaft. A space inclosed with side walls and extending through one or more stories.

Shed. A structure not exceeding three hundred square feet ground area, and not to exceed fourteen feet in height above grade to the highest point thereof, with a roof covering of fire-retarding material, and inclosing walls of combustible materials, no part of which is located on the front half of any lot. *Shelter shed.* A structure having a roof and with more than fifty per cent of the area of its sides open.

Skeleton construction. A construction type wherein all external and internal loads and stresses are transmitted cumulatively from the top of a building to the foundation by a skeleton or framework.

Spandrel. The wall construction extending from the top of an opening to the sill of another opening in the next story above and contained between vertical lines produced from the jambs of the openings.

Square. A plot of ground surrounded and bounded and inclosed by public streets, railway right of way, waterway, public place, or parks.

Stage. A structure or platform upon which an act or performance is presented.

Stairhall. That portion of a building or other structure including the stairways, and those portions of the public halls through which it is necessary to pass in the direction of exit by means of a stairway to an outside exit doorway.

Story. That part of a building or other structure included between the top of any floor and the top of the floor next above, except that the topmost story shall be that portion of a building or other structure included between the top of the floor and the ceiling above.

Street. A thoroughfare used for public foot and vehicular traffic, other than an alley.

Teaching amphitheater. A room in which students stand or sit in banks for the purpose of witnessing surgical operations, X-ray treatments, or other medical, surgical, or dental practices, anatomical exhibitions and demonstrations, and the practice of section or dissection or other scientific demonstrations.

Terra cotta. A burned clay product, sometimes used for the facing of walls or exteriors, as distinguished from structural clay tile or brick.

Toilet room. A room containing one or more water closets or urinals.

Veneer. When referring to a building or other structure shall mean an outer facing, not an integral part of the wall.

Vomitory. A passageway through the floor of any seating level by means of a level or ramped floor or steps of any combination thereof, and used as a means of ingress to or egress from the floor through which it passes.

Well. An opening through a floor, roof, or ceiling.

Yard. An open, unobstructed, and uncovered space at the rear of a lot, other than a court, extending the entire width of the lot, and whose depth shall be deemed to be the distance from the rear wall of a building to the rear of the lot.

Building Classifications

40-2. All buildings and structures existing at the time of the enactment of this code, or hereafter designed, erected, altered or converted, shall be classified according to occupancy and use in accordance with the building provisions of this code. Any requirements for buildings not herein classified shall be determined by the commissioner of buildings subject to arbitration as provided in this code.

40-3. A single dwelling is hereby defined as a building, or part of a building, other than a multiple dwelling, designed as, intended for, or used as a residence for a single family, or for a group of persons other than a single family, when such group does not exceed ten in number; or for any purpose specified in section 40-5 when the total number of patients or inmates does not exceed ten persons. Dwellings which are completely separated from each other from the ground to and through the roof by fire-resistive construction of the value required under section 61-65, without any communicating opening and which are without any means of exit in common, shall be classified as single dwellings.

40-4. A multiple dwelling is hereby defined as a building, or part of a building, designed, intended, or used as an apartment house, apartment hotel, tenement house, hotel, rooming house, lodging house, clubhouse with sleeping quarters, convent, monastery, ecclesiastical home, nurses' home, or other use in which there is more than one dwelling.

40-5. An institutional building is hereby defined as a building, or part of a building designed, intended or used for a place in which sick or injured are given medical and surgical treatment and care, including a hospital, sanitarium, medical unit, infirmary, or other similar unit for the care or treatment of men, women, or children, a home or asylum for bedridden or decrepit persons, the blind, the aged, children, or the insane, or a nursery or day nursery for infants and in which there are sleeping accommodations for more than ten individuals.

40-6. A business unit is hereby defined as any building or part of a building, designed, intended, or used as an office unit, a financial unit, a sales unit, a storage unit, or a manufacturing unit.

40-7. An office unit is hereby defined as a building, or part of a building, designed, intended, or used for office occupancy, and such units shall include, among others, office buildings or buildings in which any story above the second story is occupied for the purposes of both office and sales use, administrative buildings, and laboratories not otherwise provided for.

40-8. A financial unit is hereby defined as a building, or part of a building, designed, intended, or used for the purposes of banks, trust companies, board of trade rooms, stock exchange rooms, and trading rooms having grain pits or trading posts.

40-9. A sales unit is hereby defined as a building, or part of a building, designed, intended or used for sales purposes, and such units shall include, among others, retail stores, wholesale stores, market buildings, merchandise shops, and salesrooms not otherwise provided for and including:

Specialty store. A building, or part of a building, designed, intended, or used for wholesale or retail dealing in one commodity or in one line of allied merchandise.

General store. A building, or part of a building, designed, intended, or used for retail sale or display of merchandise of a diversified character, including in connection therewith the serving of food, where the net floor area is more than two thousand square feet. [Amend. Coun. J. 5-2-40, p. 2416.]

40-10. A storage unit is hereby defined as a building, or part of a building, designed, intended, or used for storage purposes, and such units shall include the storage of goods, wares, other articles of merchandise or commerce, freight houses, and all other storage uses not otherwise classified under the building provisions of this code.

40-11. A manufacturing unit is hereby defined as a building, or part of a building, designed, intended, or used for manufacturing purposes, and such units shall include among others, any operation or process incident to the producing, fabricating, assembling, preparing, or adapting for use, repair, servicing, or refinishing of any goods, wares, or other articles; mills, factories, greenhouses and workshops; as well as buildings used for the production of steam, gas, or electricity; or used as telephone exchanges.

40-12. A hazardous use unit is hereby defined as a building, or part of a building, designed, intended, or used for the purpose of any occupancy having contents which are liable to burn rapidly, or which are liable to emit poisonous or noxious fumes, or which are liable to cause explosions and shall include any of the types of occupancy set forth in section 51-3, and such other occupancy as shall be determined to be hazardous by the commissioner of buildings in accordance with the true meaning and intent of the building provisions of this code and consistent with the occupancies definitely classed as hazardous use units under chapter 51.

40-13. A garage building is hereby defined as a building or premises or part of a building, or premises arranged, designed, intended, altered, converted or used as a place for the housing, shelter, storage, display, parking, demonstration, sale, servicing, and repair of one or more vehicles containing flammable liquid.

40-14. A theater building is hereby defined as a building, or part of a building, designed, erected, altered, converted, or used for the specific purposes of displaying motion pictures or presenting theatrical performances before an assemblage of persons, whether such assemblage be of a public, restricted, or private nature, except such units as are otherwise classified under this chapter. The displaying of motion pictures shall include the displaying of still pictures, sound pictures and motion pictures, and the presenting of theatrical performances shall include the presenting of dramatic, operatic, comic, pantomime, or vaudeville performances, also the presenting of other amateur or professional theatricals, productions, or spectacles.

40-15. An open air assembly unit is hereby defined as a structure, or part of a structure, or group of structures, or inclosure, designed, intended, or used for the purpose of seating, sheltering, or assembling a group of persons in the open air, together with such other buildings and occupancies as are necessary to the operation of open air assembly units.

40-16. A public assembly unit is hereby defined as a building, or part of a building, designed, intended or used for the congregating, gathering, or assembling for any purpose, of a group of more than fifty persons in one or more rooms, whether such congregation, gathering, or assemblage be of a public, restricted, or private nature, except theaters, open air assembly units, churches, and schools, treated in chapters 53, 54, 56 and 57, and except such other assembly uses as are otherwise classified under this chapter. Public assembly units used regularly for the exhibition of motion pictures for which admission fees are charged shall conform to the requirements of chapter 53 of this code.

40-17. A church building is hereby defined as a building, or part of a building, designed, intended, or used as a place of worship and for other religious purposes.

40-18. A school building is hereby defined as a building, or part of a building, designed, intended, or used as a place of public or private instruction, but not including such occupancies as are otherwise classified under this chapter.

40-19. Other buildings and structures is hereby defined as all buildings and structures not included in chapter 47 to chapter 57 inclusive, including billboards, signboards, fences, hangars, ice houses, illuminated signs, incinerators, crematories, jails, police stations, fire stations, prisons, certain railroad structures, sheds, stables, and other buildings and structures not otherwise provided for in the building provisions of this code.

CHAPTER 41

BUILDING STANDARDS AND TESTS

41-1. Committee on standards and tests
41-2. Application for test
41-3. Test methods
41-4. Standard specifications
41-5. Standards for materials
41-6. Standard quality of workmanship
41-7. Penalty

41-1. For the purpose of insuring public safety and for the purpose of investigating or testing new materials, methods, or systems of construction, or new arrangements of materials, not permitted by, or varying from the requirements established by the building provisions of this code but which are claimed to be equally as good as or superior to those permitted thereunder, the mayor shall appoint a committee on standards and tests consisting of seven members, of which committee one member shall be the commissioner of buildings, three members shall be either architects or engineers licensed by the state, who shall have been residents of the county for a period of at least one year preceding the date of appointment, and three members shall be members of the city council.

The committee on standards and tests shall also determine the classification of fume and explosion hazard gases or liquids in all cases where no classification of such gases or liquids has been made in the building provisions of this code.

41-2. Any person desiring to submit any new building materials, methods or systems of construction, or new arrangements of materials not provided for in the building provisions of this code for determining or testing the adaptability or safety of such materials, methods, systems or arrangements for building purposes or to establish the safety qualifications of any substance for occupancy purposes, shall make application in writing to the city clerk, setting forth the merits claimed and the purposes desired, and shall deposit with the city treasurer a sum sufficient to cover the expenses of making said test.

41-3. The methods of the committee on standards and tests in making such tests shall follow the published standard specifications of the United States Bureau of Standards, or of the American Society for Testing Materials, insofar as such standard specifications shall govern and shall also conform to sections 41-4 to 41-6 inclusive. If, after such testing or investigation, the materials, methods, systems or arrangements of materials for construction shall be found satisfactory to the majority of all members of such committee and they shall approve its use in buildings erected, they shall submit their recommendation, if any, to the city council.

41-4. Wherever in the building provisions of this code materials used in construction, methods of installation, fire tests of materials, or other building operations are required to conform to or be at least equal to the standard specifications of materials or of practice, standard tests of materials, fire tests of construction or of materials, or any other standard specification requirement recognized and accepted by a federal or state bureau, national technical organization, or national board of fire underwriters, and the specifications or test of the bureau or society has been identified in the building provisions of this code by the designation of the said bureau or society and the date of its publication, the said documents, or so much of them as are adopted by the building provisions of this code, are hereby declared to be a part of the building provisions of this code the same as if the specifications, regulations or tests were herein fully set out; and it is further provided that authenticated copies of said documents shall be kept on file in the office of the city clerk and the commissioner of buildings.

41-5. All building materials shall be of a quality to meet the intent of the building provisions of this code, and shall conform to requirements promulgated as rules by the commissioner of buildings in accordance with the powers delegated to him by this code.

Except as hereinafter specified for particular materials, every material permitted to be used in buildings or structures in the city shall meet the standard specifications for that material as prepared by the American Society for Testing

Materials and as adopted by that Society as a standard, or as a tentative standard, on October 13, 1937. Where such standards require acceptance tests for the determination of the quality and properties of the material, proper evidence of the making of such acceptance tests shall be submitted to the commissioner of buildings upon request from him. Where in this code some other specification or standard of quality is set up for any particular material, the same shall take precedence over the said standard of the American Society for Testing Materials, but any standard requirements of the American Society for Testing Materials not in conflict with the same shall remain in full force and effect.

41-6. Workmanship in the fabrication, preparation, and installation of building materials shall meet the intent of the building provisions of this code, and shall conform to generally accepted standard practice or requirements promulgated as rules by the commissioner of buildings in accordance with the powers delegated to him by this code.

41-7. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties imposed by this section.

CHAPTER 42

REGISTRATION FOR BUILDING WORK

42-1. Registration required
42-2. Excavating work
42-3. Masonry work
42-4. Warm air furnace work
42-5. Liability for building violations
42-6. Reinstatement
42-7. Waiver of fees
42-8. Penalty

42-1. Every person engaged in the business of constructing, repairing, removing, or demolishing the whole or any part of buildings or structures, or the appurtenances thereto in the city, shall before undertaking the erection, enlargement, alteration, repair, removal or demolition of any building or structure, for which permits are required by this code, register the name and address of such person in a book kept by the commissioner of buildings and used for this purpose. No permit shall be granted for the erection, enlargement, alteration, repair, removal, or demolition of any building or structure unless the name and address of the person that is about to undertake such work is contained in the registration book kept for that purpose.

42-2. When application is made for a permit for excavating work only, the provisions of section 42-1 shall not apply to any person licensed as an excavator.

42-3. When application is made for a permit, and the work of construction involves masonry construction only, the provisions of section 42-1 shall not apply to any person licensed as a mason contractor or employing mason. Where the work of construction, for which a permit is sought, involves construction other than masonry construction, any mason contractor or employing mason, licensed as aforesaid, engaged in or undertaking the work of such construction other than masonry construction, must register his name, and comply with the requirements of this chapter before a permit for such work is issued.

42-4. [Rep. Coun. J. 4-2-41, p. 4549.]

42-5. If any person registered as provided by this chapter, shall fail in the execution of any work for which a permit was issued, to comply with the provisions of this code relative to the erection, enlargement, alteration, repair, removal, or demolition of any building, or part thereof, either the commissioner of buildings or the president of the board of health may bring suit and prosecute such person for such failure or violation, and in case of conviction, his name shall be stricken from the said registration book and shall not be re-entered or reinstated during such time as any violation exists or any judgment remains unsatisfied with regard to said conviction.

42-6. Any person that shall have been convicted under the preceding section and shall have had his name stricken from such registration book may have such name re-entered therein on filing with the commissiioner of buildings a certificate signed by the corporation counsel, the commissiioner of buildings and the president of the board of health to the effect that all violations of ordinances with reference to which conviction was secured have been corrected or are non-existent and that all claims and judgments arising from such convictions have been paid.

42-7. Any person who is required by the provisions of this chapter to register his name with the commissioner of buildings, or who is required by this chapter or other provisions of this code to pay a fee for such registration, or a license fee for the business of excavating work or for masonry or mason work shall not be required to pay any such fee if such person is already registered and licensed for such business for the current year in another city or village within the state; provided, however, that any such person shall register his name as required by this chapter and, before any permit is issued, shall pay to the city the difference in amount that such fee as required by the city exceeds the fee paid at the place of registration or licensing.

42-8. Any person violating, or resisting or opposing the enforcement of any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties imposed by this section.

CHAPTER 43

BUILDING PERMITS

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Permit Requirements

43-1. It shall be unlawful to proceed with the erection, enlargement, alteration, repair, removal, or demolition of any building, structure, or structural part thereof within the city unless a permit therefor shall have first been obtained from the commissioner of buildings.

43-2. A permit shall not be required for any minor repairs, as may be necessary to maintain existing parts of buildings, but such work or operations shall not involve the replacement or repair of any structural load-bearing members, nor reduce the means of exit, affect the light or ventilation, room size requirements, sanitary or fire-resistive requirements, use of materials not permitted by the building provisions of this code, nor increase the height, area, or capacity of the building.

43-3. Applications for building permits shall be in such form as shall be prescribed by the commissioner of buildings. Every such application for a permit shall be accompanied by a copy of every recorded easement on the lot on which the building is to be erected, and on the immediately adjoining lots, showing the use or benefit resulting from such easement. All such applications shall be accompanied by drawings, plans, and specifications in conformity with the provisions of this chapter. Where alterations or repairs in buildings are made necessary by reason of damage by fire, that fact shall be stated in the application for a permit. In such cases, before a permit shall issue, the commissioner of buildings shall cause a thorough inspection to be made of the damaged premises with the view of testing the structural integrity of the damaged parts.

43-4. All drawings and plans for the construction, erection, addition to, or alterations of any building or other structure, for which a permit is required shall first be presented to the commissioner of buildings for examination and approval as to proper use of building and premises and as to compliance in all other respects with the Chicago zoning ordinance and shall thereafter be presented to the board of health, the department of smoke inspection, fire department, department of boiler inspection, and department of public works for submission to the proper official of these departments and bureaus for his examination and approval with regard to such provisions of this code, as are within the duty of such office to enforce, and after said drawings and plans have been examined and passed upon, the same shall be returned to the commissioner of buildings where they shall be taken up for examination and approval by the commissioner of buildings.

43-5. Before any building permit is issued, the applicant shall produce evidence that he has filed with, and had approved by, the commissioner of public works, an indemnifying bond protecting the city against any and all damages that may arise to the public ways upon which such building abuts, and to the city, and to any person, in consequence or by reason of, the proposed operations to be authorized by such permit, or by reason of any obstruction or occupation of any public ways in and about such building operations.

43-6. Before the commissioner of buildings issues a permit, as provided in this chapter, he shall require evidence from the applicant that payment has been made to the bureau of water of the city for the water to be used, or for a water meter for measuring all the water to be used, in the construction of such building, in accordance with the regulations of the bureau of water.

The fees to be paid for water used in connection with the erection of buildings shall be at the rate of five cents for every one thousand bricks; wall measure, six cents for every one hundred cubic feet of rubble stone, eight cents for every one hundred cubic feet of concrete, fifteen cents for every one hundred yards of plaster, five cents for every one hundred cubic feet of hollow tile, arch, partition, or fireproof covering.

43-7. At the proper time, notice shall be given by the commissioner of buildings to the applicant that his plans have been examined and are ready to be returned to him, and if such plans have been approved as submitted to the various departments and bureaus as aforesaid, the commissioner of buildings shall, according to the building provisions of this code, issue a permit for the construction, erection, repair, or alteration of such building or structure; and shall file such application, and shall apply to such plans a final official stamp, stating that the drawings to which the same has been applied comply with the building provisions of this code. The plans so stamped shall then be returned to such applicant.

43-8. No permit shall issue for the construction, erection, repair, or alteration of any building or structure designed or intended for use as a garage or any other business, the operation of which will require a driveway across a public sidewalk, until the applicant therefor has first obtained from the commissioner of public works a permit for driveway or driveways as prescribed by sections 33-14 to 33-22 inclusive.

43-9. If, after a building or other required permit shall have been granted, the operations called for by such permit shall not be begun within six months after the date thereof, such permit shall be void and no operations thereunder shall be begun or completed until an extended permit shall be taken out by the owner or his agent, and a fee of twenty-five per cent of the original cost of permit shall be charged for such extended permit; provided, however, that in no case shall a permit be issued or renewed for a fee less than two dollars. An extended permit shall be valid for six months following the date of expiration of the original permit and must be applied for within ten days after the expiration of the original permit. Two extensions only shall be granted and if work is not begun within eighteen months after the date of issuance of the original permit, all rights under the permit shall thereupon terminate by limitation. Where, under authority of a permit, or extended permit, work has begun and has been abandoned for a continuous or cumulative period of twelve months, all rights under such permit shall thereupon terminate by limitation.

43-10. It shall be unlawful for any owner, agent, architect, structural engineer, contractor, or builder engaged in erecting, altering, or repairing any building to make any departure from the drawings or plans, as approved by the commissioner of buildings, of a nature which involves any violation of the provisions of this code on which the permit has been issued. Any such departure from the approved drawings and plans involving a violation of requirements, shall operate to annul the permit which has been issued for such work and shall render the same void.

Where any work done under a permit authorizing erection, alteration, or repair of a building or structure, is being done contrary to the approved drawings and plans, the commissioner of buildings or the president of the board of health shall have power to stop such work at once and to order all persons engaged thereon to stop and desist therefrom, which work shall not be resumed until satisfactory assurance has been given to the commissioner of buildings or the president of the board of health, as the case may be, that it will be according to the approved drawings and plans. Nothing in this paragraph shall be construed to prevent minor changes in arrangement or decoration which do not affect the requirements of any provisions of this code.

43-11. No person shall begin work on any building or structure, for which a permit is required until such permit shall have been obtained. In case any work is begun on the erection, alteration, repair, or removal of any building or structure without the issuance of a permit authorizing the same, the commissioner of buildings shall have power to stop such work at once and to order all persons engaged thereon to stop and desist therefrom until the proper permit is obtained.

43-12. Permits for the obstruction of streets shall be issued by the commissioner of public works; and before any permit shall be granted to any person, for the obstruction of any street or sidewalk, an estimate of the cost of restoring said street and sidewalk, to a condition equally as good as before it was obstructed with a fair additional margin for contingent damages, shall be made by the commissioner of public works. Such estimate shall in no case be less than two dollars per foot, or fractional part thereof, for the frontage of the portion of the street to be obstructed, and a deposit shall be required of the person desiring to obstruct such street or sidewalk. Such deposit, less the charge of five dollars per month for each twenty-five feet of frontage used, shall be returned upon the restoration of the said street and sidewalk to a condition equally as good as before it was obstructed.

When the commissioner of public works shall receive satisfactory proof that said street and sidewalk have been restored to a condition equally as good as before it was obstructed, he shall issue a certificate to the comptroller certifying to said fact, and the comptroller shall thereupon forthwith issue a warrant on the city treasurer for the amount of money thus deposited for costs which it, the city, may suffer or be put to, or which may be recovered from it by reason of the issuance of such permit, or by reason of any act or thing done or neglected to be done under or by virtue of the authority given in such permit and the requirements of the provisions of this code. Any permit issued pursuant to the terms of this section may be revoked for cause by the commissioiner of public works at any time.

43-13. It shall be unlawful for any person to erect or construct any canopy attached to a building or structure under any provision of this code or any special ordinance, any part of which canopy shall project over a public way or public place, without first submitting the plans of such canopy, and also of the part of the building or other structure to which it is to be attached, to the commissioner of buildings for his approval. No permit shall be issued by the department of public works unless the plans of such canopy shall have been approved by the department of buildings and a permit to attach said canopy to the building from which it is intended to project shall have been obtained from the commissioner of buildings. No canopy that has been or may hereafter be authorized by any provision of this code or any special ordinance shall at any time be inclosed by canvas or other cloth or material in whole or in part so as to obstruct free passage underneath same, or so as to obstruct or reduce any required exit width.

43-14. The size, number, and location of power or heating boilers to be installed in any building shall be marked on the plans, and, except in single dwellings, shall be approved by the department for the inspection of steam boilers, unfired pressure vessels and cooling plants, and by the department of smoke inspection and abatement, before a permit is issued by the department of buildings for the erection of such building.

43-15. Before proceeding with the construction, installation, or alteration of any elevator or mechanical equipment used for the raising or lowering of any curtain, stage, or orchestra floor, or any platform, dumbwaiter, escalator, or mechanical amusement device or apparatus, application for a permit for such construction, installation, or alteration shall be submitted to the commissioner of buildings either by the owner or agent of the building, or of the premises on which such equipment is to be installed. A permit shall be obtained for any alteration in such elevator equipment except that this requirement shall not apply to the replacement of existing parts with other parts which are identical with those which are replaced.

The application for a permit shall specify the number and kind of equipment which it is desired to install, or the nature of the alteration to be made and the location of the building, structure, or premises, and shall be accompanied by such drawings and specifications as shall be necessary to inform said commissioner of the plan of construction, type of elevator, dumbwaiter, escalator, or mechanical amusement device, method of alteration, and the location thereof. Every application for a permit for a mechanical amusement device shall also be accompanied by a detailed drawing and description of the construction proposed, with a certificate signed by an architect or engineer certifying to the strength and safety of such device. If such drawings and specifications show that the equipment is to be installed or altered in conformity with the building provisions of this code, the commissioner of buildings shall approve the same and shall issue a permit to such applicant upon the payment by such applicant of the permit fee hereinafter named. It shall be unlawful for any owner, agent, or contractor to permit or allow the installation or alteration of any such equipment until a permit has been obtained, and the permit fee paid.

43-16. It shall be unlawful for any person to erect or construct any fence more than five feet in height within the city limits without first obtaining a permit from the commissioner of buildings.

43-17. No person shall be permitted to move any building which has been damaged to an extent greater than fifty per cent of its value by fire, decay, or otherwise; nor shall it be permissible to move any frame building of such character as is prohibited to be constructed within the fire limits from any point outside the fire limits to any point within the fire limits; nor shall it be permissible to move any building to a location at which the uses for which such building is designed are prohibited by this code. Permits for the moving of frame buildings, other than those the moving of which is herein prohibited, shall be granted upon the payment of a fee of ten cents for each one thousand cubic feet of volume, or fractional part thereof of such building, and upon securing and filing the written consent of two-thirds of the property owners according to frontage on both sides of the street in the block in which such building is to be moved. No permit shall be issued to move any building used or designed to be used for purposes for which frontage consents are required until frontage consents in the block to which such building is to be moved have also been secured and filed as required by the provisions of this code relating to such use.

No building used for residence or multiple dwelling purposes shall be moved from one lot to another or from one location to another upon the same lot unless the space to be occupied on such lot shall comply with the provisions of chapter 48 of this code.

43-18. Any person desiring to install a tank for the storage of any flammable liquids, as provided in chapter 51 of this code, shall first obtain a permit from the commissioner of buildings; provided, however, that no permit shall be required for an aggregate capacity of tanks of one hundred twenty gallons or less for class I and class II liquids, nor for an aggregate capacity of tanks of five hundred fifty gallons or less for class III and class IV liquids. The application for the permit shall be made by the owner or his agent as required by this chapter. Before issuing such permit the commissioner of buildings shall first cause to be inspected, the location or site where such tank is to be installed, and if the site is satisfactory, such permit shall be issued upon the payment of fees hereinafter provided. Such permit shall not be assigned nor shall any right or privilege thereunder be transferred or assigned except by the written consent of the commissioner of buildings.

Every application for a permit for any such tank shall be in writing, stating the location, the space desired to be used, the length, breadth, and depth, together with the measurement in feet from the surface of the ground to the top of such tank, and shall contain the plans and specifications for the construction of said tank, its connections, fittings, openings, and safety appliances, all as required by chapter 51 of this code. No such tank or equipment shall be covered or used until the installation, material, and workmanship have been finally inspected, approved, and certified by the department of buildings.

Nothing in this section shall be construed as requiring any owner or occupant of a building, or his agent, to obtain a permit for the use, nor to prohibit the use by him of oils, paints, varnishes or similar flammable mixtures unless the storage is to be maintained longer than thirty days, or the aggregate quantities are in excess of one hundred twenty gallons for class I or class II liquids, or in excess of five hundred fifty gallons for class III or class IV liquids.

43-19. Before proceeding with the wrecking or tearing down of any building or other structure more than one story in height, a permit for such wrecking or tearing down shall first be obtained by the owner or his agent from the commissioner of buildings, and it shall be unlawful to proceed with the wrecking or tearing down of any building or structure or any structural part of such building or structure unless such permit shall first have been obtained. Application for such permit shall be made by the owner, or his agent, to the commissioner of buildings, who shall issue said permit upon such application and the payment of the fee herein provided for.

Every application shall state the location and describe the building which it is proposed to wreck or tear down. Upon the issuance of said permit, such building may be wrecked or torn down, provided that all the work done thereunder shall be subject to the supervision of the commissioner of buildings and to such reasonable restrictions as he may impose in regard to elements of safety and health; and provided further, that the work shall be kept sprinkled and sufficient scaffolding be provided to insure safety to human life, and to comply with the provisions of the act of the General Assembly, passed June 3, 1907, in force July 1, 1907, providing for the safety of workmen in and about the construction and removal of buildings.

43-20. Before any permit is issued granting authority to wreck a building or structure for which such permit is required, the person engaged in the work of wrecking the same shall file with the city clerk a bond with sureties to be approved by the city comptroller to indemnify, keep and save harmless the city against any loss, cost, damage, expense, judgment, or liability of any kind whatsoever which the city may suffer, or which may accrue against, be charged to or be recovered from said city, or any of its officials from or by reason or on account of accidents to persons or property during any such wrecking operations, and from or by reason or on account of anything done under or by virtue of any permit granted for any such wrecking operations.

Such bond in each case shall extend to and cover all such wrecking operations carried on through permits obtained thereunder by such person during any year beginning January first and ending December thirty-first, and no permit shall be issued for any wrecking work, except as hereinbefore otherwise provided during such year until such bond is filed. Said bond shall be in the penal sum of twenty thousand dollars for all wrecking operations on such buildings and other structures not more than three stories in height, and there shall be an additional bond filed in the penal sum of twenty thousand dollars or a bond in the penal sum of forty thousand dollars shall be filed in the first instance in case of wrecking operations on buildings and other structures four or more stories in height.

Upon the filing of such bond or bonds, the person engaged in the work of wrecking such buildings and other structures may obtain permits for such wrecking operations as are authorized under the said bond or bonds as hereinabove provided for, during the year in which the same is or are filed; provided, however, that in case of accident or casualty in the progress of any wrecking operations carried on under any permit so issued, or the happening of any circumstance which might, in the opinion of the commissioner of buildings, render such bond or bonds inadequate, the said commissioner may, in his discretion, require such additional bond as he may deem necessary to fully protect the city from loss resulting from the issuance of such permits before he allows the work to proceed or before any additional permits are issued by him.

43-21. The administrator of public works of the United States or such other authority as may be created by acts of Congress with power to co-operate with the city in the making of public improvements, the department of public works, the department of streets and electricity, and the fire department may engage in the work of wrecking of buildings and structures, and in such cases where any of these agencies make application for a permit to wreck buildings or structures, the commissioner of buildings shall issue such permit without the fee provided herein and shall not require the filing of a bond with sureties as provided heretofore in section 43-20.

43-22. It shall be unlawful for any person to construct, replace or install any warm air heating furnace, with appurtenances, ducts, or registers, without first obtaining a permit from the commissioner of buildings for such work, as provided by this chapter.

43-23. Before any mechanical amusement device, roller coaster, scenic railway, water chute, or other mechanical riding, sailing, sliding, or swinging device is erected, either in existing or new amusement parks, or places or sites where such devices are operated under carnival, fair, or similar auspices, a detailed plan shall be submitted to the commissioner of buildings for his approval or rejection, and if approved, a permit shall be procured by the person desiring to erect such device.

43-24. If the work in, upon, or about any building or structure shall be conducted in violation of any of the building provisions of this code, it shall be the duty of the commissioner of buildings to revoke the permit for the building or wrecking operations in connection with which such violation shall have taken place. It shall be unlawful, after the revocation of such permit, to proceed with such building or wrecking operations unless such permit shall first have been reinstated or re-issued by the commissioner of buildings. Before a permit so revoked may be lawfully re-issued or reinstated, the entire building and building site shall first be put into condition corresponding with the requirements in the building provisions of this code, and any work or material applied to the same in violation of any of the provisions shall be first removed from such building, and all material not in compliance with the building provisions of this code shall be removed from the premises.

Permit Fees

43-25. Fees for the issuance of permits for new buildings, alterations, and other structures and other permits shall be payable to the city collector when such permits are issued, as required by this chapter.

43-26. The permit fee for building new sheds not exceeding three hundred square feet in area shall be three dollars; for building new shelter sheds, at the rate of two dollars for each one thousand cubic feet or fractional part thereof.

43-27. The permit fee for all new buildings or other structures other than sheds and shelter sheds, shall be at the rate of thirty cents for every one thousand cubic feet or fractional part thereof for buildings containing not to exceed two hundred thousand cubic feet of volume; for buildings exceeding two hundred thousand cubic feet in volume thirty cents per thousand cubic feet for the first two hundred thousand cubic feet and sixty cents per thousand cubic feet for each additional one thousand cubic feet of volume or fractional part, the cubic contents being measured to include every part of the building from the basement to the highest point of the roof, and to include all bay windows and other projections.

In no case shall any permit be issued for a fee less than two dollars.

43-28. The fee to be charged for permits issued for alterations and repairs in or to any building or other structure shall be based on the cost of such alterations and repairs, and shall be at the rate of two dollars for the first one thousand dollars or part thereof, and one dollar additional for each additional one thousand dollars or part thereof, to be expended therefor. The fee for a permit to raise any building other than a frame building, shall be for shoring up, raising, underpinning or moving any building other than a frame building, twenty cents per one thousand cubic feet of volume, or fractional part thereof; provided, however, that in no case shall such permit be issued for a fee less than five dollars.

43-29. For wrecking or tearing down any building or other structure more than one story in height, the fee shall be five dollars for every twenty-five feet, or fractional part thereof, of frontage.

43-30. In addition to the permit fees for buildings, permit and initial inspection fees shall be charged as follows:

Fire escape or type T5 stairway, erection or alteration	
Four stories or less in height	$ 5.00
Each story above four	.75
Canopy or marquee, erection or alteration	10.00
Isolated chimneys or chimneys over 50 feet above any roof, erection	10.00
Tanks above roof or tower	
Over 400 gallons capacity	10.00
400 gallons capacity or less	5.00
Structural supports for tank of over 250 gallons provided permit for new building includes structural supports provided in section 43-27.	10.00
Roof of any building, recoating or recovering	2.00
Elevator or mechanical equipment used for raising or lowering a proscenium fire curtain, stage, or orchestra floor, or a platform, dumbwaiter, or escalator, constructed, installed or altered	5.00
Amusement devices	
Portable mechanical amusement device, for each assembly or installation on premises	5.00
Amusement device or other riding, sliding, sailing, or swinging device, built on the premises, installed or altered	50.00
Mechanical ventilating supply or exhaust system as required by chapter 81, inspection and testing prior to approval included	
Capacity of 5,000 cubic feet or less of air per minute	5.00
Each additional 1,000 cubic feet per minute	1.00
Increase in capacity, each 1,000 cubic feet per minute	1.00
Sum of capacity of both supply and exhaust systems shall be basis of computing capacity.	
Fences, permanent and over 5 feet high, erection	
100 lineal feet	2.00
Each additional 100 feet or part thereof	1.00
Street obstructions	
Each twenty-five feet, or fractional part thereof, of frontage occupied; per month	5.00
Tanks for flammable liquids, installation	
Classes I and II	
Capacity of 121 to 500 gallons	10.00
Each additional 1,000 gallons, or fraction thereof	.20
Classes III and IV	
Capacity of 551 to 1,000 gallons	10.00
Each additional 1,000 gallons, or fraction thereof	.10

Such permit fee shall be paid at the time the application for a permit is filed. If the site is not approved for such permit or if the permit is not used, ten dollars of the amount deposited shall be forfeited to the city. [Amend. Coun. J. 3-5-41, p. 4397.]

43-31. The fees to be charged for permits issued for the erection or construction of billboards or signboards or for the alteration thereof shall be based on the area as follows:

Up to 150 square feet	$2.00
151 to 225 square feet	3.00
226 to 375 square feet	5.00
for each 375 square feet or fractional part thereof	5.00

provided, however, that where such signboard or billboard does not exceed sixty-five square feet in area and is attached to the surface of a permanent building, in accordance with the provisions of that part of chapter 58 dealing with billboards and signboards, and is designed to give publicity to the business carried on within such building, such as the name and address of owner and the nature of business, but in no event to advertise any article manufactured by any other person, and no part of said sign is more than eighteen feet above the average inside grade at the front of the building, no fees for erection shall be charged, but not more than one sign of sixty-five square feet shall be allowed for each twenty-five lineal feet of frontage, unless the fees for erection are paid as herein provided; and provided further, that where such signboard or billboard does not exceed twenty square feet in area and is attached to the surface of a permanent building in accordance with the aforesaid provisions of chapter 58, and is designed to give publicity to some article sold on the premises, and no part of said sign is more than eighteen feet above the average inside grade at the front of the building, no fees for the erection shall be charged; and provided also, that where such signboard or billboard does not exceed twenty-four square feet in area, when attached to the front, sides, or rear walls of any building, so that the flat surface of the same is against the building, or when erected on the ground, if not erected nearer than ten feet to any building, structure, other signboard or public sidewalk, which is used to advertise the sale or lease of the property upon which it shall be erected, no fees for erection shall be charged.

43-32. Any person desiring to erect or maintain an illuminated roof sign shall pay to the city, to cover the cost of inspection and approval by the commissioner of buildings of the plans and specifications of such sign, when erected, a fee of fifty dollars for the first five hundred square feet of superficial area of such sign or fractional part thereof, and five cents for each additional square foot.

43-33. Fees for the approval of floor load placards required by chapter 61 shall be charged as follows: five dollars for each ten thousand square feet of floor area or less; for more than ten thousand square feet of floor area and not to exceed fifty thousand square feet of floor area, ten dollars; for each additional fifty thousand square feet of floor area in excess of the first fifty thousand square feet of floor area, ten dollars additional; and for issuing new placards in place of lost placards, the fee shall be: for ten thousand square feet or less, two dollars; for more than ten thousand square feet, five dollars. For the purpose of determining the amount of the fee herein required to be paid, every part of a structure separated by dividing walls as required by chapter 62 shall be considered as a separate building.

43-34. A fee of two dollars and fifty cents shall be paid to the city collector for the approval of plans, and inspection, and test, of any plumbing within any building containing not more than five plumbing fixtures. An additional fee of fifty cents shall be paid for every plumbing fixture in excess of five within such building.

43-35. The fees for the inspection of plans and issuing of permits and for the inspection of furnaces or other fuel burning equipment or devices, and issuing of certificates shall be as provided in section 99-68.

43-36. Upon approval of the plans and specifications by the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants, and the issuance of a permit for the installation of any boiler or unfired pressure vessel, the applicant for such permit shall pay a permit fee as follows:

Permit fees, including first inspection:

For each	low pressure boiler	$ 8.00
” ”	miniature boiler	8.00
” ”	high pressure boiler containing not more than 250 square feet of heating surface	10.00
” ”	high pressure boiler containing more than 250 square feet and not more than 1500 square feet of heating surface	11.00
” ”	high pressure boiler containing more than 1500 square feet and not more than 5000 square feet of heating surface	12.00
” ”	high pressure boiler containing more than 5000 square feet of heating surface	13.00
” ”	unfired pressure vessel designed for 15 pounds pressure or less	8.00
” ”	unfired pressure vessel designed for more than 15 pounds pressure	10.00

The provisions of this section shall not apply to single dwellings nor to any multiple dwelling having not more than three apartments.

43-37. The fees provided for the issuance of a permit for the installation and first inspection of a refrigerating system shall be as follows:

Multiple Dwelling and Remote Systems.

Class B and C — ten dollars for each compressor or generator unit and twenty-five cents for each evaporator.

Class D — six dollars for each compressor or generator unit and twenty-five cents for each evaporator.

Commercial and Industrial Systems.

Class A — twenty dollars for each compressor or generator unit.

Class B — seventeen dollars for each compressor or generator unit.

Class C — ten dollars for each compressor or generator unit.

Class D — six dollars for each compressor or generator unit.

Class E — six dollars for each compressor or generator unit with power supplied by a motor larger than one-third horsepower.

The permit fee for a single unit system containing six pounds or less of refrigerant with power supplied by a motor not exceeding one-third horsepower shall be one dollar, and the permit fee for a remote system serving not more than one evaporator containing less than six pounds of refrigerant with power supplied by a motor not exceeding one-third horsepower shall be three dollars.

The provisions of this section shall not apply to single dwellings nor to any multiple dwelling having not more than three apartments.

Violation of Chapter Provisions

43-38. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 44

BUILDING CERTIFICATES

44-1. Certificates required

44-2. Capacity of public buildings

44-3. Amusements

44-4. Multiple dwelling occupancy

44-5. Multiple dwelling advance occupancy

44-6. Multiple dwelling shafts and partitions

44-7. Multiple dwelling violations

44-8. Penalty

44-1. Certificates of occupancy and other certificates shall be required as provided in this chapter, except as otherwise required by chapter 46 for certificates of compliance.

44-2. The commissioner of buildings shall determine the number of persons which every building or room used for public purposes may accommodate according to the provisions of chapter 62 of this code, and shall certify the same to the bureau of fire prevention and the city clerk. No more than the number so certified shall be allowed in such room at any one time, in any building used for a hospital, business unit, theater, open air assembly unit, public assembly unit, church, or school.

44-3. No license shall be issued to any person to produce, operate, or offer for gain or profit any theatricals, shows or amusements until the commissioner of buildings, the board of health, the fire commissioner, and the commissioner of streets and electricity shall have certified in writing that the room or place where it is proposed to produce, operate, or offer such theatricals, shows, or amusements complies in every respect with the provisions of this code relating to their respective departments.

44-4. No multiple dwelling hereafter erected, shall be occupied in whole or in part for human habitation until the issuance of a certificate by the board of health that said building conforms to the requirements relative to plumbing and drainage applicable to such buildings, nor until the issuance by the commissioner of buildings of a certificate that the said building conforms to the general, special and structural requirements in the building provisions of this code applicable to new multiple dwellings. Within five days from date of application for any such certificate, a certificate of occupancy shall be issued or the official concerned shall state in writing his reasons for his refusal to issue said certificate.

44-5. The certificate above referred to may be issued in the case of a new building comprising more than three apartments so as to allow the occupancy of any completed section of the building extending from the basement to the roof in advance of the completion of the other portions of the building, when such portion is completely cut off from other parts of the building by a standard fire separation and all provisions for exits required by the building provisions of this code have been complied with.

44-6. When the outer walls of a multiple dwelling have been erected so as to outline the position of the courts and shafts required for the lighting and ventilation of habitable rooms, the owner of the building, or his representative, shall be entitled upon application in writing, to an inspection of the same by the commissioner of buildings, and if the work to that point is in compliance with the provisions regarding the size of the shafts and the location of the building, to a certificate setting forth those facts. When the work of constructing partitions has advanced to such a degree, on any floor, that the rooms on that floor are determined in their dimensions, the owner, or his representative shall be entitled to an inspection from the commissioner of buildings, and, if the rooms thus outlined, conform in their dimensions to the plans filed and to the requirements of the building provisions of this code, he shall be entitled to a certificate stating that fact.

44-7. If a multiple dwelling hereafter erected is occupied as a place of habitation in any of its parts in violation of this chapter, it shall forthwith be subject to notice from the commissioner of buildings, and shall be vacated upon such notice, and shall not again be occupied until made to conform with the building provisions of this code, nor until after the issuance of the certificates required in this chapter.

44-8. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 45

BUILDING PLANS

45- 1. General requirements
45- 2. Architect's or engineer's seal
45- 3. Architect's or engineer's certification
45- 4. Approval of preliminary plans
45- 5. Approval of working drawings
45- 6. Encroachment on public domain
45- 7. Foundations below datum
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45- 9. Filing of drawings and plans
45-10. Plans at construction site
45-11. Alterations upon stamped plans
45-12. Filing of plat
45-13. Fire escapes and exterior stairways
45-14. Tanks for flammable liquids
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45-16. Penalty

45-1. All plans and drawings for buildings or for structures other than buildings shall be presented to the commissioner of buildings for his approval, and each set of plans presented, shall be approved by the commissioner of buildings before a permit will be granted. All such plans and drawings shall be drawn to a scale of not less than one-eighth of an inch to the foot, on paper or cloth, in ink, or by some process that will not fade or obliterate. All distances and dimensions shall be accurately figured, and drawings made explicit and complete, showing the lot lines and the entire sewerage and drain pipes and the location of all plumbing fixtures within such building or structure.

45-2. No plans shall be approved for permit unless such plans are signed and sealed either by an architect licensed to practice architecture, as provided by the *Illinois Architectural Act,* or by a structural engineer licensed to practice structural engineering, as provided by the *Illinois Structural Engineering Act.*

45-3. It shall be unlawful for any architect or structural engineer or other person permitted under the laws of the state to make drawings and plans, to prepare or submit to the commissioner of buildings, for his approval, any final drawings or plans for any building or structure, which do not comply with the requirements in the building provisions of this code. It shall be the duty of the commissioner of buildings to require that all drawings and plans submitted to him for approval, for any building or structure, shall be accompanied by a certificate of such architect or structural engineer preparing such drawings and plans, that said drawings and plans comply with the requirements in the building provisions of this code.

45-4. The commissioner of buildings may in his discretion, issue a permit for the construction of a building or structure, or part thereof, upon the approval of preliminary drawings and plans, a true copy of which shall be filed with the commissioner of buildings, and before the entire working drawings and plans and detailed statements of said building have been completed and submitted for approval, if such preliminary drawings and plans and detailed statements shall be of sufficient clarity to indicate the nature and character of the work proposed and to show their compliance with the building provisions of this code; provided, however, that the complete working drawings and plans shall be submitted to the commissioner of buildings before construction is permitted. The commissioner of buildings shall check the completed drawings and plans and if approved shall stamp his official approval thereon as provided by section 43-7.

45-5. All working drawings which are used in the construction of buildings or structures shall be either made or checked by the architect or engineer responsible for the design, who shall certify thereon that such drawings conform to the approved design drawings on which the permit is based. This certification shall cover the size of wood or concrete members, the size and weight of structural steel members, and the size, length, and bending of concrete reinforcement together with the adequacy of all connections.

45-6. The commissioner of buildings shall not issue any permit authorizing the construction, erection, repair, or alteration of any building or structure unless the drawings and plans submitted for his approval clearly show that such building or structure with all its appurtenances, foundations, and parts can be erected entirely within the limits of the lot or tract of land upon which it is proposed to erect such building or structure, except as otherwise provided by this code, and no permit to erect, repair, or alter any building or structure shall authorize the use of, or encroachment upon, any part of any public way or public place for the construction of, or maintenance of, such building or structure, except as hereinafter provided, and except as otherwise provided by this code; nor shall any permit be issued for the construction or maintenance of any balcony or canopy extending over any public way or public place unless permits therefor have been obtained from the department of public works pursuant to a special ordinance specifically authorizing the same. The drawings and plans of every building or structure which show that any part of said building or structure, or any of its appurtenances, or attachments thereto, extend over any part of any public way or public place than as hereinafter provided shall, previous to being submitted to the commissioner of buildings, be submitted to the commissioner of public works and notice thereby given to him of the proposed encroachment upon any public way or public place. Proof of such notice to the commissioner of public works shall accompany drawings and plans when the same are presented to the commissioner of buildings.

45-7. When the plans for new buildings or structures involve foundations, piles, piers, or footings extending lower than twenty-five feet below city datum, the plans for such foundations shall be submitted to the city engineer for advice as to the presence or proximity of any public utility. Whenever application is made for a permit to erect any building or structure with a foundation, or part thereof, designed to extend to a depth of forty feet, or more, below city datum, the plans of said building or structure shall be submitted to the city engineer and his approval secured before a permit is issued by the commissioner of buildings for the erection of such building or structure.

45-8. No building or structure shall be erected within forty feet of any part of the harbor of the city without first obtaining a permit in writing from the commissioner of public works as provided in section 38-35 and paying the fees provided for in section 38-36 of this code.

45-9. True copies of the drawings and plans bearing the approval stamp of the commissioner of buildings shall be filed with the department of buildings and shall remain on file in that office for a period of six months after the occupation of such building, after which upon demand, such drawings and plans shall be returned by the commissioner of buildings to the person by whom they have been deposited. It shall not be obligatory upon the commissioner of buildings to retain such drawings and plans in his custody for more than six months after the occupation of the building to which they relate.

45-10. In all construction work for which a permit is required, the approved and stamped drawings, plans, and permit shall be kept on file at the construction site while the work is in progress.

45-11. It shall be unlawful to erase, alter, or modify any lines, figures, or coloring contained upon drawings or plans bearing the approval stamp of the commissioner of buildings or filed with him for reference. If during the progress of the execution of such work, it is desired to deviate in any manner affecting the construction or other essentials of the building from the terms of the application or drawing, notice of such intention to alter or deviate shall be given to the commissioner of buildings and an amended plan showing such alteration or deviation shall be submitted for his approval, and his written assent shall first be obtained before such alteration or deviation shall be made.

45-12. At the time of applying for a permit for the erection of, alteration of, addition to, or moving of any building or structure, the applicant shall submit to the commissioner of buildings a plat of the lot, showing the dimensions of the same and the position to be occupied by the proposed building, or by the building to be altered or added to, or by the buildings to be moved thereon, and the position of any other building or buildings that may be on the lot. The measurements shall in all cases be taken at the top of the first story and shall not include any portion of any public way or public place. Each application for a building permit shall be accompanied by a plat in duplicate, drawn to scale and in such form as may be prescribed by the commissioner of buildings, showing the actual dimensions of the lot to be built upon, the size of the building to be erected, its position on the lot, and such other information as may be necessary to provide for the enforcement of the regulations contained in the building provisions of this code. A careful record of such applications and plats shall be kept in the office of the commissioner of buildings.

45-13. No permit for a type T5 stairway, or a fire escape more than twenty-four inches in width shall be granted unless a detailed plan for such stairway or fire escape, approved by an architect or a structural engineer, shall be submitted to the commissioner of buildings, and a copy of such plans shall be left on file with said commissioner. No change in the position of any existing fire escape or stairway shall be made, nor shall any change in the position of any stairway or fire escape, as shown on the approved plans, be permitted unless the written consent of the commissioner of buildings shall first have been obtained.

45-14. Every application for a permit to install a tank or tanks for flammable liquids shall be made to the commissioner of buildings and shall be accompanied by a plat of survey showing the location and dimensions of all the property coming within the frontage area, the name and address of the owner or owners of each parcel of ground coming within such area, including the filling station site, and the total frontage in feet, with the consents of the required majority of such frontage.

In any location where a driveway or driveways across a public sidewalk are required in connection with the installation of a tank for flammable liquids, a permit shall not be issued until the applicant therefor has first obtained from the commissioner of public works a permit for the driveway or driveways as prescribed by sections 33-14 to 33-22 inclusive, of this code.

45-15. Every application for a permit to construct, replace, or install any warm air heating furnace shall be made to the commissioner of buildings and shall be accompanied by drawings or plans, and such specifications or statements as shall be required to show all details of construction and mechanical devices for approval of the commissioner of buildings before the issuance of such permit.

45-16. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 46

BUILDING INSPECTION

46- 1. Duty of commissioner of buildings

Buildings

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46- 3. Certificate of compliance
46- 4. Floor plan
46- 5. Notice of non-compliance
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Curtains

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Amusement parks and devices

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Billboards, signs, and signboards

46-18. Inspection required
46-19. Notice of non-compliance
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46-21. Posting non-compliance notice
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Illuminated roof signs

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Canopies and marquees

46-30. Inspection required
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Mechanical refrigerating systems

46-32. Fees
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Tanks for flammable liquids

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Mechanical ventilating systems

46-40. Inspection required
46-41. Fee

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46-42. Inspection required
46-43. Fee

Other tanks

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46-45. Fee

Boilers and unfired pressure vessels

46-46. Fees
46-47. Fee exemptions

Violation of chapter provisions

46-48. Penalty

46-1. The commissioner of buildings shall cause to be inspected annually or semi-annually, or otherwise, such buildings, structures, equipment, sites, or parts thereof, as shall be provided by this chapter, or as otherwise required in the building provisions of this code.

Buildings

46-2. The commissioner of buildings and his assistants shall make an annual inspection of all theaters, churches, schools, public assembly units, and open air assembly units; and also all buildings over one story in height, except single dwellings, multiple use buildings consisting of business and dwelling units two stories or less in height, and multiple dwellings three stories or less in height. It shall be the duty of every owner, agent, lessee, or occupant of any such building and of the person in charge or control of the same to permit the making of such annual inspection by the commissioner of buildings or by a duly authorized building inspector at any time upon demand being duly made.

46-3. Whenever any such inspection shows the building to be in compliance with the requirements of this code with respect to stairways, means of egress, and all other respects, it shall be the duty of the commissioner of buildings to issue, or cause to be issued, a certificate setting forth the result of such inspection, containing the date thereof, and a statement to the effect that such building complies in all respects with the provisions of this chapter or complies with all building provisions of this code under which such building was constructed, upon the payment of the inspection fee herein required; provided, however, that such certificate shall be issued for charitable, religious, or educational institutions as otherwise provided by section 46-7. It shall be the joint and several duty of the owner, agent, lessee, or occupant of the building so inspected, and of each and every person in charge and control of the same to frame the said certificate and place it in a conspicuous place near the main entrance of such building.

46-4. It shall be the joint and several duty of the owner, agent, lessee, or occupant of every building described in section 46-2 to provide a typical floor plan of such building reproduced on a sheet eight and one-half by eleven inches in size. Said plan shall be drawn on as large a scale as will be practicable on such sheet, and said sheet shall also state the street address of such building and shall give the class of the building, the kind of construction used therein, the height and number of stories contained therein, and the nature of the occupancy. It shall also be the joint and several duty of such owner, agent, lessee, or occupant to deliver a copy of said sheet and plan to the commissioner of buildings and to frame a copy of said sheet and place the same near the framed certificate hereinabove required. It shall also be the joint and several duty of the said owner, agent, lessee, or occupant to substitute a new sheet for the sheet on file with the commissioner of buildings, and also the sheet framed as above required, whenever such changes or alterations are made in such building as will affect the substantial accuracy of the sheet previously furnished said commissioner and framed as above required.

46-5. Where the result of such inspection shall show that such building fails in any respect to comply with the building provisions of this code, it shall be the duty of the commissioner of buildings to notify the owner, agent, lessee, or occupant of such building to this effect and to specify wherein such building fails to comply with the requirements of the building provisions of this code; and it shall thereupon become the joint and several duty of such owner, agent, lessee, or occupant to proceed forthwith to make whatever changes or alterations may be necessary to make such building comply in all respects with the requirements of the building provisions of this code, and to complete such changes and alterations within thirty days after the receipt of such notice.

46-6. The fee for annual inspection of buildings shall be paid to the city collector and shall be based on the number of square feet of floor area as follows:

Not to exceed twenty-five thousand square feet	$5.00
Exceeding twenty-five thousand square feet, for the first twenty-five thousand square feet	$5.00
For each additional twenty-five thousand square feet, or fractional part thereof	$3.00

For the purpose of determining the amount of the fee every part of a building or structure separated by dividing walls as required by the provisions of chapter 62 of this code shall be considered as a separate building.

46-7. The commissioner of buildings and the city collector shall remit all inspection fees charged, or that may hereafter be charged, against any charitable, religious, and educational institutions, when the building, or part thereof, so inspected, is located in or upon premises used or occupied exclusively and owned by such charitable, religious, or educational institution; provided, however, that such charitable, religious, or educational institution is not conducted or carried on for private gain or profit; and provided further, that every application for the remission of such fees shall be supported by the affidavit of one or more taxpayers of the city as to such facts.

Curtains

46-8. The fee for semi-annual inspection of an iron or steel curtain shall be fifteen dollars; for semi-annual inspection of an asbestos curtain, five dollars.

Amusement Parks and Devices

46-9. The commissioner of buildings shall inspect, or cause to be inspected, all buildings to be used for purposes of exhibition, amusement, or entertainment, which are attended by the public, that are within or connected with an amusement park, each year before said buildings are open to the public, for the purpose of ascertaining whether they comply with the provisions of this code and the rules and regulations of the department of buildings. The fee for such annual inspection shall be five dollars for each building so inspected.

46-10. The commissioner of buildings shall inspect, or cause to be inspected annually, all amusement devices, mechanisms, and structures, other than riding devices and other than buildings, within an amusement park, for the purpose of ascertaining whether they comply with the provisions of this code and the rules and regulations of the department of buildings; and the fee for such annual inspection shall be ten dollars for each device, mechanism, and structure so inspected. The commissioner of buildings shall inspect annually, or cause to be inspected, all amusement devices operated by animals or by other motive power and all other riding, sliding, sailing, swinging, or rolling devices situated on any lot or tract of land outside of any amusement park before said devices are opened to the public. Where said devices are taken down, removed, and reassembled or re-erected in another location, the commissioner of buildings shall inspect or cause said devices to be reinspected after each removal and before said devices are opened to the public, for the purpose of ascertaining whether they comply with the provisions of this code and the rules and regulations of the department of buildings. A fee, as provided in section 43-30 shall be paid for every such annual inspection or reinspection.

Elevators, Dumbwaiters, Escalators, and Movable Platforms

46-11. Every elevator, movable stage, movable orchestra floor, movable platform, dumbwaiter, or escalator now in operation, or which may hereafter be installed, together with the hoistway and all equipment thereof, shall be inspected under and by the authority of the commissioner of buildings at least once every six months, and in no case shall any new equipment be placed in operation until an inspection of the same has been made. It shall be the duty of every owner, agent, lessee, or occupant of any building wherein any such equipment is installed, and of the person in charge or control of any such equipment to permit the making of a test and inspection of such elevator, dumbwaiter, or escalator, and all devices used in connection therewith upon demand being made by the commissioner of buildings or by his authorized elevator inspector within five days after such demand has been made.

46-12. Whenever any elevator, movable stage, movable orchestra floor, movable platform, dumbwaiter, or escalator has been inspected and the tests herein required shall have been made of all safety devices with which such equipment is required to be equipped and the result of such inspection and tests shows such equipment to be in good condition, and that such safety devices are in good working condition and in good repair, it shall be the duty of the commissioner of buildings to issue, or cause to be issued, a certificate setting forth the result of such inspection and tests and containing the date of inspection, the weight which the equipment will safely carry and a statement to the effect that the shaft doors, hoistway, and all equipment, including safety devices, are constructed in accordance with the building provisions of this code, upon the payment of the inspection fee required by the building provisions of this code. It shall be the joint and several duty of the owner, agent, lessee or occupant of the building in which such equipment is located and of each person in charge or control of such equipment to frame the certificate and place same in a conspicuous place in each elevator, and near each dumbwaiter, movable stage, movable orchestra floor, movable platform, or escalator. The words "safe condition" in this section shall mean that it is safe for any load up to the approved weight named in such certificate.

46-13. Where the result of such inspection or tests shall show such elevator, movable stage, movable orchestra floor, movable platform, dumbwaiter, or escalator to be in an unsafe condition or in bad repair, or shall show that any of the safety devices, which are required by the building provisions of this code, have not been installed, or if installed, are not in good working order or not in good repair, such certificate shall not be issued until such elevator, its hoistway, and its equipment, or such dumbwaiter, movable stage, movable orchestra floor, movable platform, or escalator, or such device or devices shall have been put in good working order.

46-14. Whenever any elevator inspector finds any elevator or dumbwaiter and its equipment and hatchway, including doors, or any escalator, movable stage, movable orchestra floor, or movable platform in an unsafe condition, he shall immediately report the same to the elevator inspector in charge, who shall report it to the commissioner of buildings, together with a statement of all facts relating to the condition of such equipment. It shall be the duty of the commissioner of buildings, upon receiving from the elevator inspector in charge a report of the unsafe condition of such equipment and hatchway, including doors, to order the operation of such equipment to be stopped and to remain inoperative until it has been placed in a safe condition, and it shall be unlawful for any agent, owner, lessee, or occupant of any building, wherein any such equipment is located, to permit or allow the same to be used after the receipt of a notice from the commissioner of buildings, which notice is in writing, that such equipment is in unsafe condition and until it has been restored to a safe and proper condition as required by the building provisions of this code.

46-15. The fee for semi-annual inspection of an elevator, movable stage or orchestra floor or platform, dumbwaiter, or escalator shall be five dollars.

The fees herein required shall be paid either at the time application is made for inspection or upon the completion of such inspection and tests.

Grandstands

46-16. The commissioner of buildings shall inspect, or cause to be inspected, all tiers of seats and grandstands each year before the same are opened to the public for the purpose of ascertaining whether they comply with the provisions of this code and the rules and regulations of the department of buildings.

46-17. A fee shall be charged for such annual inspection as follows: where the seating capacity is five thousand or less, ten dollars; where the seating capacity is more than five thousand, twenty-five dollars.

Billboards, Signs, and Signboards

46-18. It shall be the duty of the commissioner of buildings to exercise supervision over all billboards and signboards erected or being maintained under the building provisions of this code, and to cause inspection by inspectors in his department of all such billboards and signboards to be made once each year and oftener where the condition of such boards so requires.

46-19. Whenever it shall appear to the said commissioner that any such billboard or signboard has been erected in violation of the building provisions of this code or is in an unsafe condition or has become unstable or insecure, or is in such a condition as to be a menace to the safety or health of the public, he shall thereupon issue, or cause to be issued, a notice in writing to the owner of such billboard or signboard, or person in charge, possession, or control thereof, if the whereabouts of such person is known, informing such person of the violation of the building provisions of this code and of the dangerous condition of such billboard or signboard, and directing him to make such alterations or repairs thereto, as shall be necessary or advisable to place such billboard or signboard in a safe, substantial, and secure condition, and to make the same comply with the requirements of the building provisions of this code within such reasonable time as may be stated in said notice.

46-20. If the owner or person in charge, possession, or control of any billboard or signboard, when so notified, shall refuse, fail, or neglect to comply with and conform to the requirements of such notice, the said commissioner shall, upon the expiration of the time therein mentioned, tear down, or cause to be torn down, such part of such billboard or signboard as is constructed and maintained in violation of the building provisions of this code, and shall charge the expense to the owner or person in possession, charge, or control of such billboard or signboard, and the same shall be recovered from such owner or person by appropriate legal proceedings.

46-21. If the owner of such billboard or signboard, or the person in charge, possession, or control thereof cannot be found, or his whereabouts cannot be ascertained, the commissioner shall attach, or cause to be attached to said billboard or signboard, a notice of the same import as that required to be sent to the owner or person in charge, possession, or control thereof, where the owner is known; and if such billboard or signboard shall not have been made to conform to the building provisions of this code and placed in a secure, safe, and substantial condition, in accordance with the requirements of such notice, within thirty days after such notice shall have been attached to such billboard or signboard, it shall be the duty of the commissioner of buildings thereupon to cause such billboard or signboard or such portion thereof as is constructed and maintained in violation of the building provisions of this code to be torn down; provided, however, that nothing herein contained shall prevent the commissioner of buildings from adopting such precautionary measures as may be necessary or advisable in case of imminent danger in order to place such billboard or signboard in a safe condition, the expense of which shall be charged to and recovered from the owner of such billboard or signboard, or the person in charge, possession, or control thereof in any appropriate proceedings therefor.

46-22. Every person constructing and erecting billboards or signboards shall file with the city clerk a bond, with sureties to be approved by the commissioner of buildings, in the penal sum of twenty-five thousand dollars, conditioned that such person shall faithfully comply with all the provisions and requirements of this chapter with respect to the construction, alteration, location, and safety of billboards or signboards and for the payment of the inspection fees required by this chapter; and conditioned further to indemnify, save and keep the city and its officials harmless from any claims, damages, liabilities, losses, actions, suits, or judgments which may be presented, sustained, brought, or obtained against the city or any of its officials because of the construction, maintenance, alteration, or removal of any of the said billboards or signboards, or by reason of any accidents caused by or resulting therefrom.

46-23. The annual inspection fees for the inspection of billboards or signboards shall be as follows: for signs up to fifty square feet in area, fifty cents; for signs from fifty square feet to three hundred seventy-five square feet in area, one dollar; for signs in excess of three hundred seventy-five square feet in area, one dollar for each three hundred seventy-five square feet, or fractional part thereof; provided, however, that where such billboard or signboard does not exceed sixty-five square feet in area and is attached to the surface of a permanent building in accordance with the provisions of that part of chapter 58 dealing with billboards and signboards and is designed to give publicity to the business carried on within such building, such as the name and address of owner and the nature of business, but in no event to advertise any article manufactured by any other person, and no part of said sign is more than eighteen feet above the average inside grade at the front of the building, no fees for inspection shall be charged, but not more than one sign of sixty-five square feet shall be allowed for each twenty-five lineal feet of frontage, unless the fees for inspection are paid as herein provided; and provided further, that where such billboard or signboard does not exceed twenty square feet in area and is attached to the surface of a permanent building in accordance with the aforesaid provisions of chapter 58 and is designed to give publicity to some article sold on the premises, and no part of said sign is more than eighteen feet above the average inside grade at the front of the building, no fees for inspection shall be charged; and provided further, that where such billboard or signboard does not exceed twenty-four square feet in area, when attached to the front, sides, or rear walls of any building, so that the flat surface of the same is against the building, or when erected on the ground if not erected nearer than ten feet to any building, structure, other signboard or public sidewalk, which is used to advertise the sale or lease of the property upon which it shall be erected, no fees for inspection shall be charged.

46-24. Any person owning, operating, maintaining, or in charge, possession, or control of any building, structure, billboard, or signboard within the city, that shall neglect or refuse to comply with the building provisions of this code, or that erects, constructs, or maintains any billboard or signboard which does not comply with the building provisions of this code, in all cases where no specific penalty is fixed herein, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense; and each day on which any such person shall permit or allow any billboard or signboard owned, operated, maintained, or controlled by him to be erected, constructed, or maintained in violation of any of the building provisions of this code shall constitute a separate and distinct offense.

Illuminated Roof Signs

46-25. It shall be the duty of the commissioner of buildings to cause an annual inspection to be made of each illuminated roof sign erected or constructed or being maintained under the building provisions of this code, for the purpose of ascertaining whether such sign is safely and securely constructed and safely and securely anchored, supported, and fastened to the building or structure; provided, however, that the provisions of this section shall not apply to the erection, construction, and maintenance of billboards and signboards regulated by the provisions of this code.

46-26. No person shall be permitted to erect or maintain an illuminated roof sign, or any structurally erected sign, unless he shall execute and file with the city clerk, with sureties to be approved by the commissioner of buildings, a bond to the city in the penal sum of fifteen thousand dollars, conditioned to indemnify, save, and keep harmless the city, its officers, and agents from any damage which it, or any of its officers, or agents may suffer, or from any costs, liability, or expense of any kind, which the city, or any of its officers or agents may be put to, or which may be recovered against the city, or any of its officers, or agents because of the construction, erection, and maintenance of such sign, and conditioned further faithfully to observe and perform all the provisions and conditions of this code relating to or governing the erection, maintenance, use, or inspection of illuminated roof signs.

46-27. The permission and authority to erect and maintain electrical signs shall cease at any time hereafter at the discretion of the mayor. In case the mayor shall terminate the privileges herein granted, all such electrical signs erected by virtue of the authority conferred by this chapter shall be removed at the expense of the owner of the building or the person who is then maintaining the same without any cost or expense of any kind to the city; provided, however, that in the event of the failure, neglect, or refusal of the owner of the building or structure upon which said illuminated electric sign is constructed or the person operating and maintaining said electric sign to remove said electric sign upon the revocation of the permit by the mayor as herein provided, the commissioner of buildings may proceed to remove the same and charge the expense thereof to the owner of the building or structure upon which said illuminated electric sign is constructed or to the person operating or maintaining the same.

46-28. For each annual inspection of any illuminated roof sign by the commissioner of buildings, subsequent to the first inspection, there shall be paid a fee of fifty dollars for the first five hundred square feet, or fractional part thereof; and five cents additional for each additional square foot area over five hundred square feet. In addition to the fees herein required to be paid for inspection, there shall be paid by the owner or person having charge or control of any illuminated roof sign, as herein described, an annual inspection fee to cover the cost of such inspection, which shall be made by the commissioner of streets and electricity, whose duty it shall be to cause such annual inspection to be made, and such fee shall be at the rate provided by this code.

46-29. Any person that shall erect, construct, or maintain an illuminated roof sign in violation of any of the provisions of this part of this chapter dealing with illuminated roof signs shall be fined not less than fifty dollars nor more than two hundred dollars for each offense; and each day on which any such person shall permit or allow any illuminated roof sign owned, operated, maintained, or controlled by him to be erected, constructed, or maintained in violation of any of the building provisions of this code, shall constitute a separate and distinct offense.

Canopies and Marquees

46-30. The commissioner of buildings shall make an annual inspection of canopies and marquees attached to buildings or other structures which shall extend into or over any public way or public place.

46-31. The annual inspection fee to be charged for the inspection of canopies and marquees shall be as follows: where the horizontal projection of the canopy or marquee does not exceed two hundred square feet in area, five dollars; and where the horizontal projection of the canopy or marquee exceeds two hundred square feet in area, five dollars for the first two hundred square feet, and one dollar additional for each additional fifty square feet in the area of such canopy or marquee.

Mechanical Refrigerating Systems

46-32. The fee for annual inspection for multiple dwelling and remote refrigerating systems shall be paid to the city collector as follows:

Class B. $10 for each compressor or generator unit.
Class C. $5 for each compressor or generator unit.
Class D. $3 for each compressor or generator unit.

The fee for annual inspection for commercial and industrial refrigerating systems shall be as follows:

$3.00	for each compressor or generator unit of 5 tons or less capacity.
$5.00	for each compressor or generator unit over 5 tons and not over 35 tons capacity.
$10.00	for each compressor or generator unit over 35 tons and not over 100 tons capacity.
$12.00	for each compressor or generator unit over 100 tons capacity.

Compressor capacity shall be based on five degrees evaporator temperature and eighty-six degrees condenser temperature, and compressor displacements shall conform to the following table for refrigerants named:

Carbon dioxide, CO_2	1,625 cu. in. per min. per ton
Ammonia, NH_3	6,912 cu. in. per min. per ton
Dichlorodifluoromethane, CCL_2F_2	12,528 cu. in. per min. per ton
Methyl chloride, CH_3CL	13,824 cu. in. per min. per ton
Sulphur dioxide, So_2	20,736 cu. in. per min. per ton

The provisions of this section shall not apply to single dwellings nor to multiple dwellings having not more than three apartments.

46-33. The chief inspector of steam boilers, unfired pressure vessels, and cooling plants may, and he is hereby directed to remit all inspection fees charged, or that may hereafter be charged against any and all charitable, religious, and educational institutions, when the refrigerating system or other apparatus inspected is located in or upon premises used or occupied exclusively by such charitable, religious, or educational institutions; provided, however, that such charitable, religious, or educational institution is not conducted or carried on for private gain or profit.

Revolving Doors

46-34. Every revolving door now in operation, or which may hereafter be installed, together with all the equipment and mechanism thereof, shall be inspected annually under the authority of the commissioner of buildings.

46-35. Whenever such inspection shows a revolving door to be in good working order and in compliance with this code, the commissioner of buildings shall issue, or cause to be issued, a certificate to that effect.

46-36. For each such inspection and certificate a fee of three dollars shall be charged.

Tanks for Flammable Liquids

46-37. Every tank for flammable liquids of a capacity of one thousand gallons or more, either above ground or within buildings, shall be inspected annually under the authority of the commissioner of buildings.

46-38. In case such inspection discloses any violations of this code, or any defective conditions, notice shall be sent to the owner or agent in control of such tanks to remove or correct such defective conditions within such time as shall be set forth in said notice.

46-39. For every annual inspection of a tank for flammable liquids with certificate of compliance, a fee of five dollars shall be charged for each such tank.

Mechanical Ventilating Systems

46-40. Every mechanical ventilating system shall be inspected annually by the board of health.

46-41. The fee for such annual inspection shall be fifty cents per one thousand cubic feet of air per minute or fractional part thereof of air required by the building provisions of this code to be circulated for ventilating purposes, including the sum of mechanical supply and exhaust systems; provided, however, that no such charge shall be less than two dollars. Such annual fee shall be due and payable to the city collector on the first day of March of each year.

Gas Holders

46-42. Every tank or gas holder containing more than twenty-five hundred cubic feet of explosion hazard gases within the city shall be inspected at least once every five years, as required by section 51-26 (e) under the direction of a building inspector appointed by the commissioner of buildings.

46-43. For every such five year inspection, with a certificate of compliance, a fee of ten dollars shall be charged for each tank or gas holder.

Other Tanks

46-44. Every tank having a capacity of more than two hundred fifty gallons, and located above the roof or above the floors of any building, or on any other structure, except as provided by sections 46-37 to 46-39, 46-42 and 46-43, shall be inspected annually by the commissioner of buildings as provided by this chapter.

46-45. For every such annual inspection, it shall be the duty of the owner to pay an inspection fee of five dollars for each such tank; provided, however, that for any building required to be inspected annually, the inspection fee for such tank therein or thereon shall be computed as required by section 46-6 by floor area.

Boilers and Unfired Pressure Vessels

46-46. Annual inspection fees for boilers and unfired pressure vessels shall be paid to the city collector as follows:

For each low pressure boiler	$3.00
For each miniature boiler	3.00
For each high pressure boiler containing not more than 250 square feet of heating surface	5.00
For each high pressure boiler containing more than 250 square feet and not more than 1500 square feet of heating surface	6.00
For each high pressure boiler containing more than 1500 square feet and not more than 5000 square feet of heating surface	7.00
For each high pressure boiler containing more than 5000 square feet of heating surface	8.00
For each unfired pressure vessel carrying 15 pounds pressure or less	3.00
For each unfired pressure vessel carrying more than 15 pounds pressure	5.00

The fee for inspection of boilers and other apparatus above provided for shall be double the respective amounts above specified when an inspection is made on Sunday or a legal holiday at the request of the person owning or operating said boiler or other apparatus.

The provisions of this section shall not apply to single dwellings nor to multiple dwellings having not more than three apartments.

46-47. The chief inspector of steam boilers, unfired pressure vessels, and cooling plants may, and he is hereby directed to remit all inspection fees charged, or that may hereafter be charged against any charitable, religious, and educational institution, when the boiler or other apparatus inspected is located in or upon premises used or occupied exclusively by such charitable, religious, or educational institution; provided, however, that such charitable, religious or educational institution is not conducted or carried on for private gain or profit.

Violation of Chapter Provisions

46-48. Any person violating, or resisting or opposing the enforcement of any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense.

CHAPTER 47

SINGLE DWELLINGS

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47-1. Every building or part thereof hereafter designed, erected, altered, converted, or used as a single dwelling, as defined in section 40-3, shall comply with the general provisions of this code pertaining to buildings and in addition thereto, shall comply with the special provisions set forth in this chapter.

Lot Occupancy

47-2. The minimum distance from property dividing lot lines to door or window openings through exterior walls shall be as follows: in walls built at angles of less than forty-five degrees from such lot lines the minimum distance from such lot lines to closest jambs of door or window openings shall be three feet. In walls built at angles of forty-five to eighty-nine degrees, inclusive, from such lot lines, the minimum distance from such lot lines to closest jambs of door or window openings shall be one and one-half feet. In walls built at angles of ninety degrees or more from such lot lines, the minimum distance from such lot lines to closest jambs of door or window openings shall be one foot.

47-3. Exterior enclosing walls of dwellings of wood frame construction shall not be erected closer than three feet to property dividing lot lines.

Construction

47-4. A building of wood frame construction as provided in that part of chapter 67 dealing therewith, to be occupied exclusively as a single family dwelling not exceeding two stories or thirty feet in height and having no one floor with an area of more than fifteen hundred square feet above or below the first floor may be erected on any vacant lot within the provisional fire limits of the city, except in any block in which fifty-one per cent or more of the lots in such block are occupied by buildings of other than wood frame construction. A building of wood frame construction as provided in that part of chapter 67 dealing therewith, to be occupied exclusively as a single family dwelling not exceeding two stories or thirty feet in height and having no floor with an area of more than fifteen hundred square feet above or below the first story may be erected on any vacant lot within the fire limits or the provisional fire limits of the city, except in any block in which fifty-one per cent or more of the buildings erected therein are of brick construction, provided the first story of such building from foundation to the top of the first floor ceiling joists is of brick veneer construction as defined in section 73-47.

The word "block" as used herein shall be deemed to be that property abutting on both sides of a street and lying between the two nearest intersecting streets.

Wood frame construction may be used outside the fire limits and the provisional fire limits of the city in any building to be occupied as a single family dwelling not exceeding thirty feet in height, and having no one floor with an area of more than fifteen hundred square feet above or below the first floor. [Amend. Coun. J. 11-29-39, p. 1358; 11-6-40, p. 3431.]

47-5. Ordinary construction or heavy timber construction, or a superior type of construction, shall be used in any single dwelling not exceeding three stories and basement or forty-four feet in height and having no one floor with an area of more than twenty-five hundred square feet above or below the first floor.

47-6. Semi-fireproof or fireproof construction shall be used in any single dwelling exceeding three stories and basement or forty-four feet in height, and in any single dwelling having any one floor with an area of more than twenty-five hundred square feet either above or below the first floor.

Any single dwelling more than two stories high used for hospital purposes shall be of fireproof or semi-fireproof construction throughout.

Size and Location of Rooms

47-7. Every habitable room in a single dwelling shall have a minimum floor area of seventy square feet and at least seventy-five per cent of the floor area shall have a height of not less than eight feet, measured from finished floor line to finished ceiling line and must contain not less than five hundred sixty cubic feet.

47-8. Habitable rooms may be located in a basement of a single dwelling; provided, however, that the floor of such basement is not more than four feet below grade.

47-9. Every dwelling containing a cooking stove, sink, or other equipment to prepare food by use of heat from any source shall contain at least one room with a floor area of not less than one hundred twenty square feet.

In a dwelling containing at least one other habitable room, a kitchen and dining room together may be considered as one habitable room; provided, however, that the combined area of the vertical surfaces of any partitions, pilasters, columns, or other separation between kitchen and dining room spaces shall not exceed in square feet the product of three feet multiplied by the clear ceiling height of the room, all as measured on the kitchen side of the separation; and provided further, that the opening between the kitchen and the dining spaces is not less than three feet in clear width and extends to within six inches of the finished ceiling on the kitchen side. Any opening between such a dining kitchen and any other part of the dwelling may be either with or without a door.

Multiple Use Buildings

47-10. Subject to the provisions of this chapter a single dwelling may be located in the same building with any other occupancy, except a garage building of an area greater than eight hundred square feet, except buildings for hazardous use occupancy prohibited in a single dwelling under section 51-66 and except in buildings as otherwise provided in chapters 47 to 58, inclusive.

47-11. Every single dwelling in a multiple occupancy building of any construction other than fireproof or semi-fireproof shall be separated from every other occupancy in the same building by floors, ceiling, and walls of fireproof construction of two hour fire-resistive value and shall be provided with a door giving direct exit to the outside of the building or by an exit corridor of fireproof construction giving direct exit to the outside of the building.

Means of Exit

47-12. In any single dwelling two stories in height, there shall be one stairway not less than three feet wide, extending from the topmost habitable story to the first floor, and there shall be a front and rear exit from the first floor. There shall be one stairway not less than two feet six inches in width extending from the first floor to any basement and a direct exit from the basement. If any floor above the first floor exceeds twenty-five hundred square feet in area, or if the floor of any habitable story is more than sixteen feet above the average finished level of the ground adjoining the building, there shall be one additional stairway from such floor to the first floor. The clear width of such additional stairway shall be not less than two feet six inches. Where two stairways are required, the basement stairway shall be enclosed in the basement or in the first story with not less than one hour fire-resistive construction with one and three-fourths inch thick wood slabs or more fire-resistive doors. Where two stairways are required, they shall be separated by a distance of not less than fifteen feet at the top and at the bottom, such distances being measured from doorway to doorway if both stairs are enclosed, from top rise to top rise and from bottom rise to bottom rise, if both stairways are open, and from top rise to doorway and from bottom rise to doorway, if one stairway is enclosed and the other stairway is open.

47-13. A single dwelling used for any of the purposes of a hospital and having any sleeping accommodations above the first story shall be provided with at least two stairways, each not less than three feet wide. A separate door exit shall be provided for each such stairway and from the basement to the outside of the building.

47-14. Every habitable room in a single dwelling shall have at least one doorway which will lead to an exit from the building without the necessity of passing through a bedroom, a bathroom, or toilet room.

47-15. In a single dwelling, every basement with a floor area of twenty-five hundred square feet, or less, shall be provided with an interior or exterior stairway not less than two feet six inches wide to grade with a direct exit to the outside of the building. Every basement with a floor area of more than twenty-five hundred square feet shall be provided with a stairway not less than three feet wide to grade and with one other completely separated means of exit. Said other means of exit may be either a stairway not less than two feet six inches wide to grade or to a window measuring not less than two feet six inches by three feet, having its sill not more than four feet six inches above the basement floor and opening to a public way, a private alley, an easement, a yard, an open lot line court, a through court, or an outer court. Such opening may be through an open and unobstructed areaway; provided, however, that the top of said areaway is not more than three feet above the bottom of said areaway.

Windows and Ventilation

47-16. Every habitable room in a single dwelling shall have windows and ventilation as required by section 48-59 for multiple dwellings.

47-17. Every kitchen, bathroom, or toilet room and every compartment containing any water closet or urinal fixture shall meet the requirements of section 48-60 for multiple dwellings.

47-18. A window or doorway opening upon an open porch shall meet the requirements of section 48-63 for multiple dwellings.

47-19. Every porch enclosure shall meet the requirements of section 48-64 for multiple dwellings.

47-20. Skylights used in lieu of a window, or windows, shall meet the requirements of section 48-65 for multiple dwellings.

Sanitary Equipment

47-21. Every single dwelling shall be provided with at least one water closet in a compartment within the dwelling, and at least one lavatory or sink.

Violation of Chapter Provisions

47-22. Any person violating, or resisting or opposing the enforcement of any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 48

MULTIPLE DWELLINGS

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Multiple Dwellings

48-1. Every building, or part thereof, hereafter designed, erected, altered, or converted for use as a multiple dwelling, as defined in section 40-4, shall comply with the general provisions of this code pertaining to buildings, and in addition thereto shall comply with the special provisions set forth in this chapter.

In case such provisions conflict, the special provisions of this chapter shall govern.

48-2. Certain terms in this chapter, in addition to those defined in section 40-1, are defined for the purposes thereof as follows:

Habitable rooms. Any room in which persons sleep, eat or carry on their usual domestic, or social vocations, or avocations, but shall not include kitchens, laundries, bathrooms, water closet compartments, serving and storage pantries, storage rooms and closets less than forty square feet in floor area, mechanical equipment rooms, cellars, corridors, and similar spaces, used neither frequently nor during extended periods.

Corridor type multiple dwelling. A multiple dwelling in which all vertical means of exit from any one dwelling can be reached through a common corridor and in no other way.

Kitchen. A space where food is prepared by the use of heat.

Dining kitchen. A room used as both kitchen and dining room but not used for other purposes.

Kitchen alcove. An alcove used as a kitchen.

Closet kitchen. A space containing kitchen equipment, provided with a door, or doors, whereby it may be closed off from the rest of the room in which it is located and measuring not more than three feet from its back wall to the inside face of the door, or doors, when closed.

Rectangular court. A court, every angle of which measures approximately ninety degrees or two hundred seventy degrees.

Non-rectangular court. Any court other than a rectangular court.

Closed lot line court. A court bounded on one side by a lot line and on its remaining sides either by the walls of a building, or another lot line or lot lines.

Yard Requirements

48-3. On a lot having only one street frontage, when the rear line of said lot does not abut upon a public alley, a public park, or a public waterway, there shall be a rear yard abutting the entire length of said rear line and measuring not less than eight feet at a right angle to said rear line at any point, except as otherwise provided in sections 48-4 to 48-7, inclusive. Where the rear line of said lot does abut upon an alley, the distance from any part of the building on such lot to the center line of such alley shall be not less than the requirements of the Chicago zoning ordinance.

48-4. In a volume district in which one hundred per cent of occupancy is allowed up to thirty feet above grade, a rear yard on a lot, either with or without alley, may begin at such thirty-foot level, but the width of any yard above that level shall be established as from grade.

48-5. In a fourth or fifth volume district, which is also located either in a commercial or manufacturing district, as defined in the Chicago zoning ordinance, a rear yard shall be required only as provided by said zoning ordinance.

48-6. The owner of a corner lot may select and designate which side of the lot shall be considered to be the rear. Any side, other than a street side, may be so chosen; provided, however, that for a lot bounded by three or more streets, any side may be named as the rear; provided further, that the building line requirements of the Chicago zoning ordinance shall be complied with for the true frontage of the lot as defined in said zoning ordinance without regard to the street upon which the building faces.

48-7. Any interior lot which extends between and abuts upon two approximately parallel streets, which are separated by an average distance of two hundred feet or less, is exempt from the provisions of sections 48-3 to 48-7, inclusive, for a rear yard.

Where an interior lot extends through so as to abut upon two approximately parallel streets and where the average distance between such streets is more than two hundred feet, there shall be a rear yard with a minimum dimension of sixteen feet, measured approximately at right angles to said streets, such rear yard extending the entire distance across said lot and being so located that its center line shall be not more than eight feet distant from a line midway between the two said streets; provided, however, that in lieu of such rear yard there may be an open lot line court on each side of the lot, with a minimum dimension of eight feet, measured at a right angle to the lot line and extending from either street back to a point eight feet beyond the line midway between said streets; and provided further that where a sixteen-foot rear yard exceeds the minimum requirements for dimensions and areas at all floors by not less than one hundred per cent, said rear yard may be located at any place on the lot without requiring an open lot line court. Such rear yards and such open lot line courts shall comply with all the provisions of this chapter concerning yard requirements and court requirements as to the increase of dimensions in proportion to height.

48-8. Nothing in this chapter shall be construed to require less than the minimum yard, court, building line, or setback requirements of the Chicago zoning ordinance.

Court Requirements

48-9. The provisions of sections 48-10 to 48-24, inclusive, shall apply to courts which are required for purposes of lighting or ventilation and nothing in the said sections shall be construed to prevent the construction or use of any court, regardless of size or dimensions, so long as such court is not required for the purpose of lighting or ventilation.

48-10. The required dimensions and area of any yard or court shall be exclusive of the space occupied by any porch, stairway, fire escape, or other obstruction, except as otherwise provided in sections 48-11 to 48-13, inclusive.

48-11. Any required fire escape or an unenclosed outside fireproof stairway or a solid floor balcony to an interior fire shield stairway, built as required by the building provisions of this code, if projected not more than four feet into a yard or court, or the projections of window sills, belt courses, cornices projecting not more than six inches from the face of the building at any height, shall be exempt from the restrictions provided by section 48-10.

48-12. An entrance canopy, or similar roofed space, steps, and landings serving the main exit level and their balustrades, open fences or railings, or similar structures conforming to the areas, dimensions, and other requirements of the Chicago zoning ordinance, shall be exempt from the restrictions provided by section 48-10.

48-13. A masonry stack is permitted in a court or yard; provided, however, that it adjoins a wall which is vertical and without any offset throughout its height; that it does not reduce the open area of the yard or court below the required minimum; that it does not project into a court in such a manner as to reduce the minimum dimension at such place more than fifty per cent and that it does not reduce or obstruct any required exit passage. A metal stack may be erected with the same restrictions, except that instead of adjoining the building it may be separated from a non-offset wall by a clear distance of not more than twelve inches at any point and except that it may be erected beside a verticaly offset wall, if it is so arranged as to be not more than twelve inches distant from the face of the wall at one point at each offset.

48-14. The jamb of any window, or door, in a wall of a court forming an angle with an abutting lot line shall be not nearer than one and one-half feet to such lot line.

48-15. At any height in a non-rectangular court, the area shall be not less than the minimum area, and the axial dimensions shall be not less than the minimum dimensions, required at the same height in a rectangular court. All space within a non-rectangular court that is included between the lot line and a court wall forming an angle with the lot line, or between two angling walls of a court where the included angle is less than forty-five degrees, shall not be considered as court area for the purpose of light or ventilation where the minimum distance across the said angle is less than one-half the required minimum dimensions of a rectangular court measured in the same direction.

48-16. Where the side of an interior lot is bounded by a public alley, the minimum required width and area of any court adjoining such alley shall be computed from the center line of the alley.

48-17. The minimum horizontal dimensions of a through court measured at a right angle to the lot line shall be three feet. Beginning at a height of ten feet above the bottom of the court, said minimum horizontal dimension shall be increased at the rate of not less than one foot for each ten feet of additional height, until a total horizontal court dimension of fifteen feet is attained. Above such point, the wall of the court may be carried up without further increase in said court dimension except as otherwise required by the Chicago zoning ordinance for setbacks from side lot lines.

48-18. The minimum horizontal dimension of a rectangular open lot line court, measured at a right angle to the lot line shall be four feet for a distance of fifty feet measured from the closed end of the court. For the next succeeding fifty feet, or fraction thereof, the minimum dimension shall be five feet and for each succeeding fifty feet, or fraction thereof, said minimum dimension shall be increased one foot. Beginning at a height of ten feet above the bottom of an open lot line court, the required horizontal dimension or dimensions, measured at a right angle to the lot line shall be increased at the rate of one foot for each ten feet of additional height, until a total horizontal court dimension of fifteen feet is attained. Above such point, the court may be carried up without further increase in said court dimension, except as otherwise required by the Chicago zoning ordinance.

48-19. The minimum horizontal dimension of a rectangular outer court, measured parallel to the open side of such court, shall be eight feet for a distance of fifty feet, measured from the inner or closed end of the court. For the next succeeding fifty feet, or fraction thereof, the minimum dimension shall be ten feet, and for each succeeding fifty feet, or fraction thereof, said minimum dimension shall be increased two feet. Beginning at a height of ten feet above the bottom of an outer court, the required horizontal dimension or dimensions, measured parallel to the open side of the court shall be increased at the rate of two feet for each ten feet of additional height until a total horizontal court dimension of thirty feet is attained. Above such point, the court may be carried up without further increase in said court dimension, except as otherwise required by the Chicago zoning ordinance. The increase in horizontal dimensions, required by this section, may be obtained by stepping back either or both of the side walls.

48-20. The minimum horizontal dimension of a rectangular closed lot line court, measured at a right angle to the lot line, shall be five feet. Beginning at a height of ten feet above the bottom of the court, the required horizontal dimension, measured at right angle to the lot line, shall be increased at the rate of one foot for each ten feet of additional height, until a total horizontal court dimension of fifteen feet is attained. Above such point, the court may be carried up without further increase in said court dimension, except as otherwise required by the Chicago zoning ordinance. The minimum horizontal dimension of a rectangular closed lot line court, measured parallel to the lot line at any height, shall be not less than twice the required minimum dimension measured at a right angle to the lot line at the same height. The increase in horizontal dimension parallel to the lot line may be obtained by stepping back either, or both, of the end walls. The minimum area of a rectangular closed lot line court, at any height, shall be determined from the table following this paragraph.

For any height not given directly in the table, said minimum area shall be determined by interpolation between the two nearest heights.

Areas of Closed Lot Line Courts

Height above bottom of court Feet	Minimum allowable area Square feet
0	100
10	100
20	132
30	168
40	208
50	252
60	300
70	352
80	408
90	468
100	532
110	600
More than 110	600

48-21. The minimum dimension of a rectangular inner court shall be ten feet. Beginning at a height of ten feet above the bottom of the court, said minimum dimension shall be increased at the rate of two feet for each ten feet of additional height, until a total dimension of thirty feet is attained. Above such point, the court may be carried up without further increase in any court dimension; provided, however, that the areas required by the table following this paragraph are maintained. The increase in horizontal dimensions required by this section may be obtained by stepping back either or both of the walls which face each other across the court. The minimum area of a rectangular inner court at any height shall be determined from the table following this paragraph. For any height not given directly in the table, said minimum area shall be determined by interpolation between the two nearest heights.

Areas of Inner Courts

Height above bottom of court Feet	Minimum allowable area Square feet
0	200
10	200
20	264
30	336
40	416
50	504
60	600
70	704
80	816
90	936
100	1064
110	1200
More than 110	1200

48-22. The bottom of a yard or court may be established of minimum dimensions in any story above grade with offsets above such story, or stories, in conformity with the provisions of this chapter dealing with court requirements, so that at any story the required minimum dimension shall be maintained. In offsetting, one or more walls of any court may be vertical throughout the entire height so long as minimum dimensions and areas as established by the provisions of this chapter dealing with court requirements are maintained.

48-23. The minimum dimension and area through the entire height of any court, in a building not more than three stories and basement, need not exceed the dimension and area required by sections 48-9 to 48-22, inclusive, for a court of ten feet high; provided, however, that in every dwelling there shall be at least one habitable room with a door or window opening on a street, alley, casement, yard as provided in that part of this chapter dealing with rear yard requirements, or court of the full dimensions and area required by sections 48-9 to 48-22, inclusive.

48-24. Every closed lot line court and every inner court shall be ventilated from the lowest level of the court by a tunnel or passage having a minimum cross-sectional area of thirty square feet and extending from the court to a public way, private alley, rear yard, side yard, public waterway, or public park. Such tunnel or passage shall not be closed or obstructed wholly or partially by anything that will affect ventilation, and if it serves as an exit, it shall conform to the requirements of section 48-58. Two or more tunnels may be used if their combined openings are equivalent to the area herein required, but in no case shall the least dimension of such tunnel be less than two feet.

Fireproof Construction

48-25. Fireproof construction may be used in any multiple dwelling, and shall be used in any multiple dwelling building exceeding eighty feet in height.

48-26. In any multiple dwelling required to be of fireproof construction, every dwelling and every public corridor which serves as the only means of exit from one or more dwellings shall have enclosing walls as required in sections 48-28 and 48-29 for semi-fireproof construction.

Semi-fireproof Construction

48-27. Semi-fireproof construction may be used in any multiple dwelling not exceeding eighty feet in height, and semi-fireproof or fireproof construction shall be used in any multiple dwelling of greater height than four stories and basement, or fifty feet.

48-28. In any multiple dwelling required to be of semi-fireproof construction, every dwelling shall have enclosing walls or partitions of one hour fire-resistive construction not less than three inches thick, exclusive of plaster or other finish, and every such wall shall extend from the top of the fire-resistive floor slab to the underside of the fire-resistive slab at the ceiling. All other partitions in a multiple dwelling of semi-fireproof construction shall be of one hour fire-resistive construction, and no combustible studding or combustible lath shall be permitted in any partition in a building of semi-fireproof construction.

48-29. In a multiple dwelling required to be of semi-fireproof construction, every public corridor which serves as the only means of exit from one or more dwellings shall have walls of two hour fire-resistive construction, not less than three inches thick, exclusive of plaster or other finish, and every such wall shall extend from the top of the fire-resistive floor slab to the underside of the fire-resistive slab above.

Ordinary and Heavy Timber Construction

48-30. Ordinary or heavy timber construction may be used for multiple dwelling buildings subject to the provisions of the following sections in this chapter dealing with ordinary and heavy timber construction. The height in stories hereinafter stated shall be the number of stories exclusive of the height of any basement.

48-31. Multiple dwellings, not exceeding one story in height, may be of ordinary or heavy timber construction, and if there are no living rooms in the basement shall be exempt from the special provisions of sections 48-32 to 48-34, inclusive.

48-32. In a building more than one story high and less than four stories high, all structural metal or concrete reinforcement in any column or other member supporting a required division wall between dwellings, or any part of such a wall, shall have a two hour fire-resistive covering.

48-33. In a three story building, there shall be a ceiling of metal lath and plaster between the first story and the entire basement. The provisions of section 48-32 shall also apply to such a building.

48-34. In a building more than three stories and basement, or forty-four feet high, every wall, partition, and ceiling shall be covered with metal lath and plaster meeting the requirements of chapter 68 of this code. Any metal column or other metal member supporting any floor in such a building shall have a two hour fire-resistive covering. The provisions of sections 48-32 and 48-33 shall also apply to such a building.

48-35. Any multiple dwelling may be built of ordinary or heavy timber construction not exceeding four stories high and not exceeding fifty feet in height; provided, however, that with the exception of required fire-resistive walls between dwellings and for enclosing walls of stairways, every wall partition and ceiling shall be protected with a covering that shall be at least as fire-resistive as metal lath and plaster. Where there are living rooms in the basement there shall be a floor of two hour fire-resistive construction between the first story and the entire basement. Where there are no living rooms in the basement, there shall be either a ceiling of metal lath and plaster between the first story and the entire basement or a standard system of automatic sprinklers over the entire basement. Any metal column or other metal members supporting any floors in such a building shall have a two-hour fire-resistive covering. The provisions of section 48-32 shall also apply to such building.

48-36. In a multiple dwelling required to be of ordinary or heavy timber construction, every dwelling shall be vertically separated from all other parts of the building by walls of two hour fire-resistive, non-combustible construction; provided, however, that where two or more dwellings are contained within a floor area not exceeding eight hundred fifty square feet, such vertical separation walls shall be required only to include such area and shall not be required between dwellings within such area. In a hotel, rooming house, lodging house, club house with sleeping quarters, convent, monastery, ecclesiastical home, nurses' home, or other use in which there are sleeping quarters for more than ten persons, there shall be for every eight rooms on any one floor, dividing walls of two hour fire-resistive construction separating such eight rooms from the contiguous space. Nothing in this section shall be construed to require a fire separation within a dwelling of any area whatever if such area is obviously intended for one apartment for the use of only one family. Every required separation wall between dwellings shall extend from the basement floor, or from a floor of two hour fire-resistive construction directly over the entire basement, to the underside of the roof sheathing; provided, however, that any such wall may be offset at any floor if the floor construction between such offsets is of two hour fire-resistive construction and all structural supports for the offset portion of the wall are fireproofed as required by the building provisions of this code. Every doorway in a required vertical separation wall between dwellings shall be equipped with a standard forty-five minute fire-resistive door. No fire-resistive or non-combustible door shall be required in any wall between a dwelling and a corridor, or stair, except in a standard fire division wall and as otherwise required by this chapter. Any dwellings in a basement which is required by the building provisions of this code to be covered in whole, or in part, by a floor of two hour fire-resistive construction, shall be separated from one another by walls of two hour fire-resistive construction.

48-37. In a corridor type multiple dwelling, required to be of ordinary or heavy timber construction, every public corridor shall have walls, floors, and ceilings of two hour fire-resistive non-combustible construction. Every doorway from a dwelling into such a corridor shall be equipped with a door not less fire-resistive than a wood slab door one and three-fourths inch thick.

Wood Frame Construction

48-38. Wood frame construction may be used in any multiple dwelling outside the fire limits or the provisional fire limits of the city, but shall not be used within such limits. Wood frame construction shall not be used in any corridor type multiple dwelling. No multiple dwelling of wood frame construction shall contain more than four dwellings, or exceed twenty-five feet in height.

Size and Location of Rooms

48-39. Every habitable room in a multiple dwelling shall have a minimum floor area of seventy square feet, and at least seventy-five per cent of the floor area shall have a height of not less than eight feet measured from finished floor line to finished ceiling line and must contain not less than five hundred sixty cubic feet. Every room used as a sleeping room for more than one person shall contain not less than four hundred cubic feet for each adult person.

48-40. Habitable rooms may be located in a basement of a multiple dwelling; provided, however, that the floor of such basement is not more than two feet below the inside sidewalk grade. No habitable rooms shall be located in any basement having a lower floor level.

48-41. For the determination of ventilation and lighting requirements, the floor area of an alcove shall be considered as part of the floor of the room to which it is connected up to thirty per cent of the floor area of the room to which it is connected, but it shall not be considered as a part of the seventy square feet of floor area required by section 48-39. Any alcove containing a floor area greater than thirty per cent of the floor area of the room to which it is connected shall comply in all respects with the requirements for a separate room. The opening between an alcove and a habitable room shall be unobstructed and shall be equal in area to not less than twenty per cent of the entire wall area of the alcove.

48-42. Every dwelling containing a cooking stove, kitchen sink, or other kitchen equipment shall contain at least one room with a floor area of not less than one hundred twenty square feet.

48-43. In a dwelling containing at least one other habitable room, a kitchen and dining room together may be considered as one habitable room; provided, however, that the combined vertical surfaces of any partitions, pilasters, columns, or other separation between kitchen and dining room spaces shall not exceed in square feet the product of three feet multiplied by the clear ceiling height of the room, all as measured on the kitchen side of the separation; and provided further, that the opening between the kitchen and dining spaces is not less than three feet in clear width and extends to within six inches of the finished ceiling on the kitchen side. The combined floor area of the kitchen and dining spaces, and the combined natural ventilation of such spaces, shall meet the requirements for a habitable room. Any opening between such a dining kitchen and any other part of the dwelling may be either with or without a door.

48-44. A kitchen alcove shall comply with all the requirements of section 48-41 for an alcove room.

48-45. A closet kitchen shall be ventilated as provided in the last paragraph of section 48-60, but shall not be subject to any other provision in that part of this chapter dealing with windows and ventilation, nor shall it be considered as a room for any purpose of the building provisions of this code. In all of its effect upon required light and ventilation, the floor space occupied by a closet kitchen shall be considered as a part of the floor area of the room in which said closet kitchen is located, but the floor space occupied by the closet kitchen shall not be considered as a part of the minimum floor area required for such room.

48-46. Sleeping stalls shall not be constructed or used in any room in any building, now existing or hereafter erected and devoted in whole or in part to the purposes of a lodging or rooming house, unless such room has a ceiling height of not less than nine feet and unless such room has two or more windows which face directly upon a public way, private alley, yard, court, public waterway, or public park, and which have a combined glass area and ventilating area as required for habitable rooms by section 48-59 of this chapter; nor unless the semi-partitions forming such stalls are so constructed that there is a clear and unobstructed interval of at least thirty inches between the top of each semi-partition and the ceiling of the room; nor unless each such stall shall open directly into an aisle or passageway, leading directly to a stairway, or stairway fire escape, the location of which is indicated by a red sign, and at night by a red light also. Such sleeping stalls shall not be installed in any room in such numbers that there shall be less than five hundred cubic feet of air per person. The semi-partitions forming such stalls hereafter constructed shall be of non-combustible material.

Porches and Exterior Stairways

48-47. Every porch or exterior stairway of a multiple dwelling more than three stories and basement in height shall be constructed wholly of non-combustible material, except as provided in section 48-48. Every such porch or exterior stairway more than two feet above finished ground level shall be provided with a guard, fence, balustrade, or wall on every open side, constructed as required by chapter 61 of this code.

48-48. Roofs, floors, joists, risers, treads, and stringers of wood may be used in porches and exterior stairways of multiple dwellings four stories or less in height, if wholly supported on masonry, or reinforced concrete walls or piers, as follows:

Corner piers of brick masonry supporting a stairway or porch which projects beyond the outer wall of the building shall be not less than sixteen inches square; or if angle-shaped, shall have outer faces measuring not less than twenty inches with a thickness not less than twelve inches.

Intermediate piers of brick masonry, shall measure not less than twelve inches in least dimension and shall have a cross-sectional area of not less than two hundred square inches. Every opening between piers shall be filled in with a guard wall of masonry not less than nine inches thick, or of reinforced concrete or metal, and not less than three feet six inches high, measured vertically from the platform or stair casing, and supported on a steel or reinforced beam or beams.

Multiple Use Buildings

48-49. Subject to the provisions of section 48-50, a multiple dwelling may be located in the same building with any other occupancy, except hazardous use occupancies prohibited in a multiple dwelling under section 51-66 of this code, and except as provided in chapters 47 to 58, inclusive, of this code.

48-50. Every part of a building used as a multiple dwelling in a building of multiple occupancy shall be separated from every other occupancy in the same building by construction of the fire-resistive value required by chapter 63 of this code.

Means of Exit

48-51. Every habitable room in a multiple dwelling shall have one doorway which will lead to an exit from the dwelling without the necessity of passage through a bedroom, bathroom, or toilet room.

48-52. Every dwelling above the first story shall be provided with an exit, or exits, as set forth in the following paragraph. No part of any such exit shall be through another dwelling.

Each dwelling unit containing more than four habitable rooms shall have two separate means of exit to a public corridor. Each dwelling unit shall have one exit doorway so located that it may be reached from any habitable room in the dwelling unit without passing through more than one other habitable room; provided, however, that any dwelling unit with a single means of exit to a public corridor shall be in a building of ordinary, heavy timber, semi-fireproof, or fireproof construction.

48-53. Every required exit from a dwelling above the first story shall lead either directly to two vertical means of exit or into a public corridor lobby or other space leading to two vertical means of exit. Where two means of exit are required, each exit from the dwelling shall be from different rooms, or other spaces, but both such exits may open into the same public corridor, lobby, or other space, if such space is provided with two separate vertical means of exit meeting the requirements of section 48-54. In the second paragraph of section

48-52, where a single doorway is permitted as the only means of exit from a dwelling above the main exit level, such doorway shall open into a public corridor, lobby, or other space from which there are two separate vertical means of exit meeting the requirements of section 48-54.

48-54. In any multiple dwelling there shall be at least two public vertical means of exit leading to the main exit level of the building, accessible from each dwelling. Provided, however, that an apartment whose gross floor area does not exceed 1,000 square feet and having not to exceed six habitable rooms in an existing tenement house and which at the time of the passage of this ordinance had not access to two stairways, may have exit to a second stairway through another apartment, provided the door between the two apartments is equipped with a glass panel not less than five feet high and twenty inches wide, the glass in such panel to be of not greater thickness than double strength American window glass, with the bottom of the same not less than eighteen inches above the floor. Or where the floor level of said apartment is not more than twelve feet above the surface of the yard or ground surrounding the building, a balcony with an area not less than eighteen square feet equipped with a drop ladder to the ground may be attached to the outside wall of said building accessible by a door or window from such apartment. Said balcony and drop ladder shall be constructed in compliance with sections 64-64 and 64-66 of this code. Such glass panel, door or balcony and ladder, as the case may be, shall be considered as a secondary means of exit from said apartment, if in the judgment of the Commissioner of Buildings such glass panel door, balcony and ladder will afford safe means of exit for any such apartment.

Means of exit shall be so located that no exit door from any dwelling above the main exit level shall be distant more than thirty feet in a building of wood frame construction, or more than fifty feet in a building of ordinary or heavy timber construction, except as hereinafter provided, or more than one hundred feet in a building of semi-fireproof or fireproof construction from a doorway into the enclosure of such means of exit or from a doorway or window opening to a fire escape or to an outside stairway. Such distance shall be measured as a horizontal radius from the center of said doorway or window opening. In any multiple dwelling of the corridor type there shall be a vertical means of exit within twenty-five feet of every end of a corridor, if the building is of ordinary or heavy timber construction, and within fifty feet of every end of a corridor, if the building is of semi-fireproof construction. Access from any dwelling to the two required vertical means of exit may be by way of a single corridor, and it shall be permissible to locate such vertical means of exit in such a manner that it is necessary to pass by one of them in order to reach the other, if both are enclosed with two hour fire-resistive enclosure. It shall not, however, be permissible to pass through any portion of the enclosure of one vertical means of exit to reach another vertical means of exit.

The minimum required width of stairways in a multiple dwelling shall be as required in chapter 64 of this code. [Amend. Coun. J. 10-31-40, p. 3343.]

48-55. Every required vertical means of exit shall give egress directly to the outer air at grade, or at the main exit level of the building, or it shall terminate in a foyer, lobby, or other public room having the required number and width of exits to the outer air at the main exit level of the building but such public space at main exit level shall have at least two exits. Vertical means of exit, consisting of enclosed stairways above the main exit story and continuing as open stairways through that story, shall be considered as meeting the requirements of this section.

48-56. Every opening into a stairway or other vertical shaft in a multiple dwelling more than three stories and basement in height, and every opening into a fire-shield stairway of any height shall be provided with a forty-five minute fire-resistive door. In any corridor type multiple dwelling of ordinary or heavy timber construction, more than one story and basement in height, every doorway from a dwelling into a corridor shall be equipped with a door not less fire-resistive than a one and three-fourths inch wood slab door. [Amend. Coun. J. 5-2-40, p. 2416.]

48-57. A non-required stairway located entirely within the enclosing walls of one dwelling is not required to be further enclosed. Such a stairway may be of any material not less fire-resistive than wood and may be of any dimensions and proportions. Every non-required stairway which is open to use by occupants of more than one dwelling shall conform to all the requirements of a required stairway.

48-58. A public doorway, corridor, stairway, ramp, or other part of a public exit in a multiple dwelling shall be not less than three feet in clear width at any point; provided, however, that handrails in stairways shall be considered as obstructions; and provided also that the opening of a revolving door may be of lesser width as provided in chapter 64 of this code. The aggregate width of doorways forming exits from the building shall be not less than the aggregate width of required stairways; provided, however, that where the aggregate width of exits leading to such outside exit is greater than three feet six inches, the exit doorway may be not less than eighty-seven and one-half per cent of the aggregate width required by this section.

Windows and Ventilation

48-59. Every habitable room in a multiple dwelling, except as especially provided in section 48-61 for certain public rooms, shall have one or more windows facing on an opening upon a public way, a private alley on the same premises, an easement, a public park, a public waterway, or upon a yard or court meeting the requirements of those provisions of this chapter dealing with yard requirements or court requirements. The combined glass area in such windows in such room shall be not less than one-tenth of the floor area of the room and in no case less than ten square feet. The total width of glass in any required sash shall be not less than one foot. The top of every window sash containing any required glass shall be at least six feet six inches above the floor. Every window shall be so constructed as to permit its being opened for not less than forty-five per cent of its full area. The combined area of ventilating openings in any habitable room shall be not less than five per cent of the floor area of that room.

48-60. Every kitchen or toilet room and every compartment containing any water closet or urinal fixture and every storage room or closet having a floor area greater than forty square feet shall be ventilated as required by section 48-59 with the following exceptions:

(a) The smallest allowable combined glass area shall be six square feet, instead of ten square feet.

(b) A system of mechanical ventilation meeting the requirements of chapter 81 of this code may be used in lieu of the natural ventilation and light otherwise required in every kitchen or toilet room and every compartment containing any water closet or urinal fixture.

(c) Every closet kitchen shall be provided with a flue or duct for exhaust ventilation with a free cross-sectional area of not less than thirty-two square inches for each closet kitchen served thereby, and such flue or duct shall lead to the atmosphere approximately in a vertical direction, or as required by the preceding paragraph of this section.

48-61. Every public dining room, banquet room, ballroom, or similar public room shall have windows, doors, transoms, and skylights, or any of them, as required by section 48-59 for a habitable room, or shall have a system of mechanical ventilation meeting the requirements of section 48-59 and chapter 81 of this code; provided, however, that no window or other ventilation shall be required for a public lobby or public space having a volume of less than six thousand cubic feet.

48-62. Every room in which any person is employed shall have natural ventilation as required by section 48-59 for a habitable room, or shall have a system of mechanical ventilation meeting the requirements of section 48-59 and chapter 81 of this code. Nothing in this section shall be construed as permitting any violation of the Chicago zoning ordinance or to require the ventilation of any public room which is exempted from such requirement by section 48-61.

48-63. A window opening on an open porch shall be considered as meeting the requirements of sections 48-59 to 48-62, inclusive, if said porch faces upon a public way, private alley on the same premises, casement, public park, public waterway, or a yard or court meeting the requirements of those sections of this chapter dealing with yard requirements or court requirements. No point of such window shall be distant more than eight feet horizontally from the nearest outside line of said porch. The enclosure of any such porch shall be only as provided in section 48-64.

48-64. Every enclosure shall have a glass area not less than twice the glass area in all required windows, doors, and transom openings into said porch from any room or rooms in the case of a street front porch and not less than three times such area in the case of a porch not on a street front. Enclosing sash and frame may be of either wood or metal. The top of every enclosing sash shall be not less than six inches higher than the top of any required window, door, or transom opening into said porch. At least forty per cent of the required glass area of the enclosure shall be arranged to open.

48-65. A skylight or skylights meeting the requirements of chapter 65 of this code may be used in lieu of a window or windows in any habitable or non-habitable room in the story beneath a roof, but not in a room in any other location. The glass area and amount of opening of such a skylight shall be computed the same as for a window.

Sanitary Equipment

48-66. Every dwelling shall have access to at least one lavatory, one bath tub or shower, and one water closet. Every family dwelling within an apartment house, apartment hotel, or tenement house hereafter erected shall contain within the enclosing walls of such dwelling not less than one lavatory or sink, one bath tub or shower, and one water closet. Public lavatories, bath tubs or showers, and water closets shall be provided for the occupants of dwellings which do not have private fixtures of these respective kinds. In every story of a multiple dwelling there shall be at least one public lavatory, one public bath tub or shower, one public water closet for each ten sleeping rooms, or fraction thereof, not included in dwellings which have private fixtures of the same respective kinds, or there shall be at least one each of said fixtures for each twenty persons, or fraction thereof, for whom sleeping accommodations are provided in rooms not included in dwellings which have private fixtures of the same respective kinds, if such calculation, based on the number of persons, gives a greater number of fixtures than does the calculation based on the number of rooms. No lavatory, bath tub, shower, or water closet shall be considered as both a public and private fixture, nor as a private fixture for more than one dwelling. There shall be at least one lavatory in every public toilet room.

48-67. Every room used exclusively as a bedroom shall have access to at least one water closet compartment without passing through another room used exclusively as a bedroom.

Lighting Exits

48-68. Every corridor, stairway, or ramp which serves as a required means of exit from more than one dwelling shall be provided with a system of electric lighting which will produce an illumination of five-tenths foot candle on the floor at every corridor angle, corridor intersection, stair or ramp landing, stair or ramp platform or doorway, and an illumination of two-tenths foot candle at every other point on the floor of such corridor, stairway, or ramp.

48-69. In a multiple dwelling of the corridor type, there shall be a standard exit sign over every doorway which leads from a public corridor to a vertical means of exit. In a multiple dwelling of any type, there shall be a standard exit sign over every doorway which serves as a required exit from a lobby, dining room, or other assembly room which has a floor area of more than five hundred square feet.

Fire Protection

48-70. A standard inside standpipe system, meeting the requirements of chapter 92 of this code, shall be provided in every multiple dwelling which is more than eighty feet in height.

Violation of Chapter Provisions

48-71. Any person violating, resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 49

INSTITUTIONAL BUILDINGS

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49-1. Every building or part of a building, designed, erected, altered, or converted for use as an institutional building, as defined in section 40-5, shall comply with the general provisions of this code pertaining to buildings and in addition shall comply with the special provisions set forth in this chapter.

49-2. The capacity of an institutional building shall be based on the sum of the maximum capacity of all rooms used as sleeping rooms by patients or inmates and by personnel and employes.

Any room with a floor area of more than six hundred square feet and designed or used as a place of assembly shall be classed as an assembly room and shall have a rated capacity as computed for assembly rooms.

Lot Occupancy

49-3. Every institutional building shall be located on a lot or tract of land having not less than one frontage on a street.

49-4. Any court required for purposes of light and ventilation shall conform to the minimum requirements for courts and multiple dwellings as given in that part of chapter 48 dealing with court requirements except as otherwise provided in this chapter.

Construction

49-5. Fireproof construction shall be used in any institutional building more than seven stories and basement or eighty feet in height.

49-6. Semi-fireproof or a superior type of construction shall be used in any institutional building more than one story and basement in height and not more than seven stories or eighty feet in height.

49-7. Ordinary or heavy timber construction, or a superior type of construction, shall be used for every institutional building not more than one story above grade in height; provided, however, that the level of the floor shall be at or above grade and located on a fill of non-combustible material. If there is a basement or other open space beneath the first floor, then the floor construction above such space including also the walls, partitions, and stairways, or other construction of the basement, and the enclosing walls and partitions inclosing the stairways shall be of three hour fire-resistive construction.

49-8. Any room used for assembly, social, educational, devotional, or residential purposes located within an institutional building shall be of fire-resistive construction equal to the requirements for the construction of such building.

49-9. Every porch or exterior stairway more than one story and basement in height shall be constructed of non-combustible material. Every exterior stairway above the main exit level of an institutional building shall be provided with a roof, except the highest flight which shall then have ice-proof treads.

Sleeping Rooms

49-10. Any room or space designed, intended, or used for a sleeping room, ward, or dormitory, either for patients and inmates, personnel or employes, or other occupants shall be considered as sleeping rooms.

49-11. Every room used or designed to be used for a sleeping room, ward, or dormitory for patients and inmates, personnel, employes, or others shall have a floor area of at least one hundred square feet, and a ceiling height of at least nine feet six inches; provided, however, that a nurses' home, which is built either above or below any space in a building used as an institutional building shall conform to the requirements of this section. The number of the individuals for whom sleeping accommodations may be provided in any room, ward, or dormitory shall not exceed the number for whom both floor space and room volume will be provided for in accordance with the following table:

	Minimum floor area per person Sq. Ft.	Minimum volume of room per person Cu. Ft.
Adults	80	800
Children 2 to 14 years of age	50	500
Children under 2 years of age	20	200

Corridors, halls, operating rooms, laboratories, treatment rooms, utility rooms, floor pantries, serving rooms, tea kitchens, linen rooms, janitors' closets, medicine rooms, chart rooms, toilet rooms, bathrooms, dressing rooms, morgues, autopsy rooms, or any other kind of rooms used for any service, including medical, surgical, therapeutic, and nursing, but not used as sleeping quarters, shall not be factors in the determination of sleeping room capacity.

Multiple Use Buildings

49-12. Subject to the provisions of sections 49-13 and 49-14, an institutional building may be located in the same building with other occupancies, as provided by chapter 63 of this code. A hazardous use unit, a class 1 garage, a school or theater are prohibited in an institutional building, except as otherwise provided in chapters 47 to 58, inclusive, of this code.

49-13. Every required separation between an institutional building and a nurses' home, nurses' training school, or a medical school shall have the fire-resistive value required by chapter 63 of this code; provided, however, that any space used for a nurses' home, nurses' training school, or a medical school included within the walls or under the same roof as an institutional building shall conform to the requirements of this chapter for construction, size, and location of rooms as well as exits.

49-14. Every doorway in a wall separating an institutional building from a nurses' home or a medical school shall be a forty-five minute fire-resistive door.

Means of Exit

49-15. The width of all doorways, passages, stairways, and ramps in an institutional building, and the number and width of stairways from any story containing sleeping rooms shall be in accordance with the following paragraph of this section and sections 49-20 and 49-21. The width of doorways, passages, stairways, and ramps from any story containing assembly rooms, lecture rooms, out-patients' rooms, or similar rooms for the congregating of the public or employes in an institutional building shall be at a rate of not less than two feet six inches per one hundred persons capacity of such rooms, which width shall be maintained throughout the building from said rooms to the outside exit doorways; provided, however, that if the stairways provided for sleeping rooms have a total combined width sufficient to meet the requirements of this section, additional width of stairs shall not be required.

Every required passage, corridor, stairway, ramp, or other part of a required exit in an institutional building shall be at least three feet eight inches in clear width, unobstructed by any radiator, lighting fixture, or other object. Such clear and unobstructed width shall be maintained from the floor to a height of at least seven feet above the floor. Any corridor leading from patients' rooms or wards to other means of exit shall be not less than six feet six inches wide.

49-16. Every doorway to any patient's or inmate's sleeping room, ward, or dormitory shall be at least three feet eight inches wide between jambs.

49-17. Every door between a corridor and a store room, a room containing X-ray apparatus, anaesthetizing room, operating room, delivery room, record file room, or other similar room shall, if of combustible material, be not less than one and three-fourths inches thick at any point either in a single thickness or in laminated layers.

49-18. No transom shall be installed except over doorways to the outer air, vestibules, or lobbies, or over doorways connecting corridors. Such transoms shall be at least as fire-resistive as the required doors above which they occur.

49-19. All the means of exit from a teaching amphitheater shall have a width computed at the rate of one foot eight inches per one hundred persons capacity; provided, however, that no aisle or stair shall be less than two feet six inches wide at any point. There shall be not more than ten seats in a row between aisles and not more than five seats in a row between any aisle and a wall.

49-20. In every institutional building there shall be at least two stairways between the main exit floor and every habitable floor.

49-21. Required stairways shall be so located that no point on any floor above the first story shall be more than seventy-five feet from the center line of the entrance doorway to such stairways as measured on a straight line. Every stairway shall lead either directly or by way of a public corridor or other public room to an outside exit doorway. The horizontal distance in a straight line between the center line of the entrance doorways to basement exit stairways shall be not less than one-half the greatest horizontal dimension of the entire basement or sub-basement measured parallel to an inclosing wall thereof. Basement stairways shall be so located that no point on the basement floor shall be more than one hundred feet from a stairway or from an outside exit doorway.

49-22. Every required stairway, except for a teaching amphitheater, shall have rises of not more than seven and one-half inches and treads of not less than ten inches.

49-23. Every required stairway in an institutional building shall conform to the requirements of chapter 64 of this code.

49-24. Every ramp serving as a required means of exit shall have a slope not greater than one in ten.

49-25. An open stairway may be built from the first or entrance floor of an institutional building to a height of not more than thirty feet above the average level of the sidewalk or ground adjoining the front of the building. Any such stairway shall be wholly in addition to the stairways required in section 49-20. There shall be a floor and wall of two hour fire-resistive construction between any stairway permitted by this section and every portion of the building containing any ward, dormitory, or patients' or inmates' sleeping room. Every doorway in such partition shall be equipped with a forty-five minute fire-resistive door.

49-26. There shall be not less than two outside exit doorways in any institutional building. Outside exit doorways shall be so located that no point on the main exit floor shall be more than ninety feet from the center of such a doorway. Every required outside exit doorway shall open directly to a public way, or to a yard or court having direct connection to a public way, unobstructed by any gate or door, or to a fireproof roof of a fireproof building or uncovered terrace not less than ten feet wide, nor more than fifteen feet above the average level of the adjoining ground, and having a stairway or ramp not less than three feet six inches wide leading directly to a public way, a yard, or court having a direct connection to a public way, unobstructed by any gate or door.

49-27. Every outside exit door shall open outward, and shall be without any lock which requires the use of a key to open it from the inside, except that where forcible detention is necessary, other locks may be used. Revolving doors may be used in institutional buildings, but if used, they must be wholly in addition to the doors required by the building provisions of this code. No single door nor leaf of a double door of any exit shall be more than four feet wide.

Windows and Ventilation

49-28. Every required window in an institutional building shall face upon a public way, private alley, yard, or court not less than ten feet in width.

49-29. Every habitable room, including sleeping rooms, in an institutional building shall have a window or windows with a glass area of not less than ten per cent of the floor area of the room with closures of the area required by chapter 81 of this code. All other rooms in an institutional building shall have either windows or a mechanical ventilating system as required by chapter 81 of this code.

49-30. Skylights may be used in lieu of windows as provided in chapter 65 for any room in an institutional building except sleeping rooms.

Equipment

49-31. The minimum number of plumbing fixtures on each floor of an institutional building for the general use of patients or inmates having sleeping accommodations on such floor, except for deductions as provided in the following paragraphs of this section shall be as follows:

For each twenty patients, or inmates, or fraction thereof — 1 lavatory.

For each twenty male patients, or inmates, or fraction thereof — 1 water closet.

For each twenty female patients, or inmates, or fraction thereof — 1 water closet.

For each forty patients, or inmates, or fraction thereof — 1 bathtub, shower bath, or spray bath.

For each fifty patients, or inmates, or fraction thereof — 1 drinking fountain.

If plumbing fixtures of any required kind are provided for the exclusive use of patients or inmates occupying any sleeping room or ward, the number of patients or inmates so provided for need not be considered in computing the number of fixtures of the same kind which are required for general use; provided, however, that the number of patients or inmates having such exclusive use of any such fixture shall not exceed the number permitted in the preceding paragraph of this section for a fixture of the same kind.

Plumbing fixtures, as provided in the first paragraph of this section are not required for nurslings.

49-32. All flammable photographic X-ray and other films shall be stored in a standard fireproof vault or fireproof cabinet constructed as required by chapter 51 of this code.

49-33. In every existing institutional building, within one year from June 10, 1938, and in every institutional building hereafter designed, erected, altered, or converted, every room used for the storage or application of anaesthetics consisting of flammable or explosive gases or mixtures, including cyclepropane, ether, ethyl chloride, ethylene, propylene, or any flammable liquids, shall have safeguards for installation and operation of such rooms and equipment as required by the following section.

49-34. Any cylinders containing anaesthetizing gases or liquids shall be plainly marked with the name of the substance which they contain, and shall comply with the requirements of the Interstate Commerce Commission for such containers. Such cylinders or containers shall be stored in a room having either natural or mechanical ventilation and shall not be stored in any operating room. Approved regulators or gas flow devices shall be provided for any such substances except low pressure oxygen containers. No such regulators or gas flow devices shall permit the intermixing of gases by any error of manipulation.

All anaesthetizing equipment using combustible anaesthetics shall be grounded to the water supply system to reduce the possibility of static electric sparks. Metal door sills, trim, hardware, and metal cases shall be grounded. Any motor used in such room shall be explosion proof as required by section 51-93 of this code. Switches controlling any such motor or electrical apparatus or lighting circuits and receptacles in a room where flammable vapors are present shall not be permitted within the room unless such equipment is protected and approved for use with explosive gases. All the electric lights in such a room shall be inclosed by vapor proof globes. Telephones, telephone ringing apparatus, and electric bells or annunciators shall not be permitted within such a room.

Fire Protection

49-35. In every room where flammable or explosive gases or materials are stored, signs shall be posted in a permanent location having clear and legible letters as follows: "NO SMOKING" — "NO OPEN FLAMES" — "NO LIVE CAUTERY."

49-36. Every institutional building more than three stories and basement in height shall be provided with a standpipe or standpipes meeting the requirements of chapter 92 of this code.

49-37. A standard system of automatic sprinklers, meeting the requirements of chapter 91 of this code, shall be provided in every room of an institutional building, used as a paint shop, carpenter or other work shop, a standard fire proof vault for films, or a waste paper storage room. Every cabinet used for the storage of flammable photographic, X-ray, and other films shall be provided with at least one automatic sprinkler head connected with a water supply having a pressure of ten pounds per square inch.

49-38. Every institutional building more than one story high shall be equipped with a standard fire alarm system, installed and arranged in accordance with the provisions of chapter 90 of this code. A city fire alarm box shall be located within a distance of one hundred feet from the principal entrance of every institutional building. New installations of city fire alarm boxes, necessary to meet this requirement, shall be at the expense of the owner of the property affected.

49-39. Standard fire extinguishers as described in chapter 90 of this code shall be installed in every institutional building as follows:

One standard fire-extinguisher in each basement and each hallway of each floor which has an area greater than four thousand square feet and not more than ten thousand square feet; two standard fire-extinguishers where the area of every such floor exceeds ten thousand square feet; one standard fire-extinguisher in each basement and in each hallway of each floor above the third floor where the area of any such floor is four thousand square feet or less.

Exit Lighting and Signs

49-40. Every means of exit in an institutional building shall have a system of electric lighting as required by chapter 66 of this code for the normal illumination of exits.

49-41. Every institutional building two stories or more in height shall have additional illumination in all exit connections as required by chapter 66 of this code for additional illumination of exits.

49-42. The entire lighting system or systems of an institutional building shall be independent of the lighting system of any part of the building used for other than institutional building purposes, and shall be on a separate meter and separate service connection from any such other lighting system.

49-43. In every institutional building two stories or more in height, standard exit signs, standard directional signs, and standard fire escape signs shall be provided to mark the ways of egress as required by chapter 66 of this code for exit signs.

Violation of Chapter Provisions

49-44. Any person violating, resisting or opposing the enforcement of any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 50

BUSINESS UNITS

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50-1. A business unit shall, for the purposes of this chapter, be defined as provided in section 40-6 of this code.

Court Requirements

50-2. Every court which is necessary to obtain windows or other openings for required natural lighting and ventilation, shall be open to the sky, and shall meet the requirements of sections 50-3 and 50-4.

50-3. In an inner court of any business unit, the minimum horizontal dimension, measured at a right angle to any wall line at any point, and the minimum area measured at any height, shall conform with the following table:

Minimum Dimensions and Areas of Inner Courts

Height of court stories	Dimension in feet	Area in square feet
1	6	100
2	6	120
3	8	160
4	8	160
5	12	260
6	16	400
7	20	625
8 or more	24	840

50-4. In a lot line court of any business unit, the minimum horizontal dimension, measured at a right angle to any wall line, street line, alley line, or yard line, shall be equal to one-half of the minimum horizontal dimension required for an inner court under the table in section 50-3 and in a lot line court of any business unit, the minimum area measured at any height shall be equal to one-half the minimum area required for an inner court under the aforesaid table; provided, however, that the minimum horizontal dimension and the minimum area required for a lot line court shall obtain irrespective of the presence of or dimensions of courts on other premises bound by the same lot line.

Construction

50-5. Fireproof construction shall be used for any business unit exceeding eighty feet in height, except as otherwise provided in section 50-7 for heavy timber construction.

Non-combustible structural members supporting a roof only, and located more than twenty feet above the floor directly beneath, need not be fireproofed. The roof slabs, plates, or arches shall have a fire-resistive value of one hour.

50-6. Semi-fireproof construction may be used for any business unit not exceeding eighty feet in height.

50-7. Heavy timber construction, or a superior type of construction, shall be used for every business unit more than fifty feet in height and not exceeding one hundred feet in height, excepting sales units, which shall not exceed eighty feet in height if built of heavy timber construction; and except as otherwise provided by section 50-8. If such unit is equipped throughout with a standard system of automatic sprinklers, the roof sheathing may be one and five-eighths inches thick in one layer.

50-8. Ordinary construction, or a superior type of construction, shall be used for any business unit fifty feet or less in height; provided, however, that in every business unit more than two stories high, if of ordinary construction, ceilings and partitions shall be covered with metal lath and plaster.

50-9. A type of construction in which all exterior walls are composed of a metal frame and sheet metal enclosure, in which all parts that carry loads or resist strains are constructed of metal and in accordance with the building structural provisions of this code may be employed in the construction of any storage or manufacturing unit, not exceeding one story in height, no part of which shall extend nearer than fifty feet to any lot line, alley line, or street line. If the exterior walls are constructed of non-combustible studs, metal lath, and cement plaster, not less than one and one-half inches thick, such a building one story high may be located not less than twenty feet from any such lot line, alley line, or street line; and such a building two stories high may be located not less than fifty feet from any lot line, alley line, or street line.

50-10. Wood frame construction may be used for any business unit twenty-five feet or less in height and one-thousand two-hundred and fifty square feet or less in area which is outside the fire limits and provisional fire limits established by this code, except as permitted within the provisional fire limits, and except temporary buildings otherwise permitted.

50-11. Every mezzanine in a business unit shall be built to conform to the construction required for the unit, except as provided by this section:

Fireproof or semi-fireproof construction. In any business unit of fireproof or semi-fireproof construction, except storage units, any mezzanine may be built of non-combustible materials without fireproofing; provided, however, that any such mezzanine shall not exceed five hundred square feet, nor shall the aggregate area of mezzanines exceed ten per cent of the floor area or fire area in the first story, nor five per cent of such area in any other story.

Storage units. In any storage unit of fireproof or semi-fireproof construction, any mezzanine may be built of non-combustible materials if the area of such mezzanine does not exceed ten per cent of the floor area or fire area in the first story, or five per cent of the floor area in any other story.

50-12. A manufacturing unit, used exclusively for the production and distribution of electricity, gas, or steam, shall be exempt from all limitations of fire areas, height, or mezzanine areas provided in the building provisions of this code; provided, however, that such a unit shall be constructed entirely of non-combustible materials with interior framing members, either with or without fireproof covering, and separated from all other units or other uses with standard fire separation; and provided further, that any such unit shall not be located either above or below any occupancy other than that used for the production or distribution of electricity, gas, or steam. Any tank used for a gas reservoir shall be located as required by chapter 51 of this code.

50-13. Every ceiling of a basement in any business unit of ordinary construction shall be of one hour fire-resistive construction, and every wall and partition in such a basement shall be of not less than one hour fire-resistive construction; provided, however, that the basement of every sales unit shall be either plastered or sprinkled.

Fire Areas

50-14. Standard fire division walls built as required by the general provisions of this code pertaining to buildings shall be provided in business units as required by that part of chapter 62 dealing with fire division areas. In addition to subdivision into areas as required by those sections, business units shall be subdivided by standard fire division walls running through the full depth of the building from the street frontage wall as required by the following sections of this chapter dealing with fire areas.

50-15. Any building of fireproof construction which is used for storage or manufacturing purposes and not over two stories in height may have undivided fire areas of any area, if occupied by not more than one person.

50-16. Any one story building of semi-fireproof construction which is used for storage or manufacturing purposes may have undivided fire areas of any area, if occupied by not more than one person.

50-17. Any one story business unit of heavy timber construction which is occupied by more than one person, shall have one such wall for each eighty feet of street frontage or part thereof. Any one story building of heavy timber construction used for storage or manufacturing purposes which is occupied by one person may have undivided fire areas of any area.

50-18. Any one story business unit of ordinary construction, which is occupied by more than one person shall have one such wall for each fifty feet of street frontage or part thereof. Any one story building of ordinary construction used for storage or manufacturing purposes which is occupied by only one person may have undivided fire areas of any area; provided, however, if any such structure contains a basement story, such basement story shall be subdivided by standard fire division walls into areas not exceeding nine thousand square feet each.

50-19. Any one story business unit of ordinary or heavy timber construction shall have, in addition to the walls required by sections 50-17 and 50-18, partitions of one hour fire-resistive construction from floor to ceiling between the different persons in such units.

50-20. Every story below grade shall be subdivided as required by the foregoing sections of this chapter dealing with fire areas; provided, however, that any basement areas may be increased above the required limits by any area under public sidewalks wholly within the curb lines and lot lines produced across sidewalks.

Rooms

50-21. No part of any floor in a business unit lower than a basement A story shall be designed, constructed, converted, or used for business purposes unless such unit is of fireproof construction. No part of any floor lower than a basement B story in any sales unit shall be used as a salesroom.

50-22. Any assembly room in a business unit shall meet the requirements of chapter 55 of this code, except a banking room, stock exchange, trading room having a grain pit or trading post therein, lobby, loggia, or rotunda which shall meet the requirements of this chapter.

50-23. Any room in a business unit may have mezzanines not in excess of the following provisions:

Office and financial units. Not more than one tier permitted unless the building is of fireproof or semi-fireproof construction.

Sales units. Only one mezzanine story in any story, and the combined area of mezzanines in any one story or fire area shall not exceed ten per cent of the floor area or fire area in such story; provided, however, that a mezzanine in the first story may be not more than twenty per cent of the floor area or fire area.

Storage units. More than one tier of mezzanines permitted.

Manufacturing units. More than one tier of mezzanines permitted; provided, however, that the combined area of mezzanines in any one story or fire area shall not exceed twenty per cent of the floor area or fire area in such story.

50-24. Every room or space in a business unit, except a storage unit, and except any space above or beneath a mezzanine, having an area of one thousand square feet or less, shall have a height of not less than eight feet; provided, however, that beams or ducts may project not more than twelve inches below such required height.

50-25. Any bakery or food baking room, or any ice cream factory, in any business unit, except a bakery or ice cream making room which is part of a kitchen for a restaurant or multiple dwelling, shall be so located that the floor shall be at or above a level five feet below the established sidewalk or alley grade adjacent to the building. Such floor, if below grade, shall be constructed of impervious non-combustible material, but may have a hardwood finish surface. All intersections of floors and walls shall be made rat proof. All walls and ceilings, except where heavy timber construction is permitted shall be of smooth non-combustible material.

Multiple Use Buildings

50-26. Subject to the provisions of section 50-27, a business unit may be located in the same building with any other occupancy, except a hazardous use unit and, except also as otherwise provided in chapters 47 to 58, inclusive.

50-27. Every business unit shall be separated from every other occupancy in the same building, as provided in chapter 63 of this code; provided, however, that no separation is required between business units.

Means of Exit

50-28. Every room having an occupancy of more than seventy-five persons shall have at least two doorways, remote from each other, leading to an exit or exits.

50-29. In each story which is occupied by more than one occupant in any business unit, there shall be a corridor, lobby, hall, passage, or similar enclosure, to permit public ingress to, and egress from, a stairway or other vertical means of exit. In any story which is used by only one occupant in any business unit, no such corridor, hall, lobby, passage, or similar enclosure shall be required, and it shall be permissible to enter any such space directly from a stairway or other vertical means of exit; provided, however, that on the street exit floor the means of exit from any required inclosed stairway shall be through a passage, corridor, lobby or vestibule, or shall open direct to the outside.

50-30. The clear width of every corridor, lobby, hall, or passageway leading to an exit shall be not less than three feet eight inches for the first fifty persons to be accommodated thereby, and six inches additional for each additional fifty persons, or fraction thereof. Main public corridors shall be not less than five feet in clear width; provided, however, that branch public corridors not more than twenty-five feet in length may be made not less than three feet eight inches in clear width. In no case shall a corridor, lobby, hall, passage, or similar enclosure in the main exit story have a clear width which is less at any point than the aggregate required width of the vertical means of exit served thereby at such point; provided, however, that a basement stairway used wholly by employes engaged in operation or maintenance of a building, and a vertical means of exit having a direct outside exit doorway may be entirely disregarded in computing the said width of such corridor, lobby, hall, passage, or similar enclosure.

50-31. In any one story building, having combustible contents, which by the provisions of that part of this chapter dealing with fire areas may have an undivided fire area of thirty thousand square feet or less, the maximum distance of travel from any point to one horizontal exit connection from such fire area shall not exceed one hundred feet. In any one story building having non-combustible contents which, by the provisions of that part of this chapter dealing with fire areas may have an undivided fire area, the maximum distance of travel from any point to one horizontal exit connection from such fire area shall not exceed one hundred fifty feet.

50-32. No horizontal exit shall be considered in lieu of other exits under this section unless the fire area on either side of such horizontal exit is sufficient to hold the joint occupancy of both fire areas, allowing not less than three and one-half square feet of clear floor space per person, and unless the vertical exits for each fire area meet the requirements of the building provisions of this code; provided, however, that for a floor area of four thousand square feet or less having horizontal exits on both sides connecting with two fire areas, no interior stairway, fire-shield stairway, nor stairway fire escape shall be required if horizontal exits are of the same width as required stairways. When vestibules or balconies are used they shall conform to the requirements for vestibules or balconies for fire-shield stairways.

50-33. In every business unit, the aggregate clear width of doorways serving as an exit from any room or floor area to a stairway or other means of exit shall be not less than thirty-six inches for the first fifty persons to be accommodated thereby, and six inches additional for each additional fifty persons, or fraction thereof. The aggregate clear width of doorways at main exit level serving as an exit from any stairway, hall, or passageway shall be not less than the required width for such stairway, hall, or passageway, except that for any stairway from a basement which is used wholly by employes engaged in operation or maintenance of the building, such stairway shall not be considered in computing the required width of doorways. No single exit door, when used as a unit in a group of doors, shall have a clear width of less than two feet six inches.

50-34. In every general store, the doorways at street exit floor shall equal the aggregate width of stairways, escalators, and other vertical exits required as a means of egress from the basement, plus twenty-two inches for each three thousand square feet, or fraction thereof, of sales area on the street level floor; provided, however, that the aggregate width of doors thus computed shall be equivalent to the aggregate width of stairways, escalators, or other vertical exits required as a means of egress from the upper floors, plus twenty-two inches for each three thousand square feet, or fraction thereof, of sales area on the street level floor.

50-35. Vertical means of exit shall be so located that no point in any floor area shall be more distant from a vertical means of exit than one hundred fifty feet in fireproof units and one hundred feet in other than fireproof units, measured along the line of travel from an exit; provided, however, that when any floor area is subdivided into smaller areas, such as rooms in office units, the distance from the corridor entrance door of any such room along an unobstructed hall to an exit shall be not more than one hundred fifty feet in fireproof units and not more than one hundred feet in other than fireproof units.

In storage units of either fireproof or other than fireproof construction, the location of exits required by this section shall be not more than one hundred fifty feet from any point in a floor area.

50-36. Every habitable story of a business unit shall have stairways leading to the main exit level of the type required by chapter 64, and the number of stairways shall meet the requirements of section 50-35 for location and of this section, as follows:

3000 square feet or less. Units three thousand square feet or less in any net floor area above the main exit level, one fire-shield stairway or one interior stairway and one exterior fire escape stairway; provided, however, that any such building of other than fireproof or semi-fireproof construction shall have two stairways, and every basement shall have two stairways.

3000 to 7000 square feet. Any business unit more than three thousand square feet and less than seven thousand square feet in any net floor area shall have one fire-shield stairway and one interior stairway, or one interior stairway and one exterior fire-escape stairway, except as otherwise provided for sales units, which shall have one fire shield stairway and one interior stairway; provided, however, that any such business unit three stories or less in height may have two interior stairways in lieu of the above requirements.

7000 square feet or more. Any business unit having seven thousand square feet or more in any net floor area, and not exceeding two hundred sixty-four feet above grade, shall have one fire-shield stairway and one interior stairway, or two interior stairways and one exterior fire-escape stirway, except sales units, which shall have one fire-shield stairway and one interior stairway; provided, however, that any such unit which is three stories or less in height may have two interior stairways in lieu of the above requirements.

Over 3 stories high. In any business unit more than three stories in height which is required by section 50-35 to have four or more vertical means of exit, two of such stairways shall be fire-shield stairways.

Over 264 feet high. Units exceeding two hundred sixty-four feet above grade shall have stairways as determined by this section for floor areas, but at least one of such required stairways shall be a fire-shield stairway extending from the highest roof level to grade.

50-37. No stairway shall extend more than two hundred sixty-four feet above grade. Exterior fire-escape stairways shall not be used in lieu of any other required stairway for a sales unit; provided, however, that for the purpose of reducing the width of required stairways in any business unit, it shall be permitted to substitute one unit of thirty-six inches of width of an exterior fire-escape stairway in lieu of each unit of twenty-two inches of required stairway width, subject to other requirements of sections 50-36 and 50-38 for the minimum number and minimum width of stairways.

50-38. The unit of stair width shall be twenty-two inches. Fraction of a unit shall not be counted. No stairway required by section 50-36 as an exit shall have an unobstructed width of less than three feet eight inches throughout its length. The aggregate width of stairs in any story of the building shall be such that the stairways can accommodate the total number of persons ordinarily occupying or permitted to occupy the largest floor area served by such stairways above the flight or flights of stairways under consideration, on the basis of forty persons for each unit of stair width; provided, however, that the number of persons to be accommodated, as herein provided, may be sixty persons for each such unit of such total number when a horizontal exit is provided in accordance with the provisions of that part of this chapter dealing with means of exits and eighty persons for each unit of such total number when the building is equipped with automatic sprinklers and a horizontal exit is provided.

50-39. Every required stairway in a department store shall be non-combustible and every required stairway in other business units shall be as required by chapter 64 of this code.

50-40. Any flight of stairs in a sales unit shall have a vertical rise of not more than nine feet without an intermediate platform or landing and not more than twelve feet in any other business unit.

50-41. Any stairway leading to a space or roof, which is used only occasionally by employes engaged in the operation or maintenance of the building, or any stairway, which is for the sole use of employes of an occupant, may be a winding or spiral stairway and the width of treads and risers may be of any dimension.

50-42. Every sales unit having a basement used for sales purposes shall have inclosed stairways from such basement equal in number and width to the required number and width of enclosed stairways above the main exit level, and if a greater number or width of stairways is required from such basement, such additional stairways may be either open or enclosed.

50-43. Manufacturing units used exclusively for the manufacture or distribution of electricity, gas, or steam shall have means of exit provided for a capacity in persons equivalent to one person for each four hundred square feet of floor area. A minimum of two stairways shall be provided for each thirty thousand square feet of floor area on one floor above or below the main exit level.

Windows and Ventilation

50-44. Every room in a business unit open to the public or employes shall be lighted by means of windows facing upon a public way, yard, court, or other open space, or by means of skylights in the ceiling and roof immediately above the story to be lighted, or by artificial illumination as otherwise required by the building provisions of this code.

50-45. Ventilation shall be required in all habitable spaces in business units by means of openings in windows or skylights with closures of the required area, or a mechanical ventilating system, as provided in chapter 81 of this code; provided, however, that windows or ventilating systems shall not be required for rooms used for cold storage or refrigeration purposes.

50-46. All windows and skylights for the purposes of this part of this chapter dealing with windows and ventilation shall be as provided in chapter 65 of this code. Any window for a food baking room, kitchen, or room used for the preparation of food shall have its sill not less than three feet above grade.

Equipment

50-47. Every elevator or dumbwaiter in a business unit shall meet the requirements of chapter 79 of this code.

50-48. An escalator normally operating in the direction of exit may be considered at a means of exit for any business unit to the extent permitted by chapter 64 of this code; provided, however, that such escalator shall be enclosed and shall be of the horizontal tread type, and without combustible material except where the required stairway construction may be combustible; and provided further, that such escalator shall meet the requirements of chapter 79 of this code. Wherever escalators shall be installed as a means of ingress there shall be provided an equal number of escalators operating normally in the direction of egress. In no case shall the point of entry to such an escalator operating in the direction of egress be more than fifty feet distant from the discharge point of the corresponding escalator providing a means of ingress.

50-49. Every business unit shall be provided with toilet fixtures in accordance with maximum capacity of the unit as follows:

Water closets. Not less than one water closet for twenty-five males in all units and not less than one water closet for twenty-five females in all units, such capacity referring to the maximum number of employes; provided, however, that for any business unit having not more than five employes, one water closet for both sexes.

Urinals. Not less than one urinal for every three water closets for males.

Lavatories. Not less than one lavatory in every toilet room containing any water closet.

Fire Protection

50-50. A standard system of automatic sprinklers meeting the requirements of chapter 91 of this code shall be provided in every room used for the storage or baling of waste paper in every business unit; for every space used as a carpenter or paint shop, or store room for lumber or furniture in an office or financial unit; and, for all basement spaces in any department store and throughout all department stores two stories or more in height.

50-51. A standard inside standpipe system meeting the requirements of chapter 92 of this code shall be provided in every business unit which is more than eighty feet in height; provided, however, that such a standpipe system shall not be required in a sales unit having a standard system of automatic sprinklers.

50-52. Standard fire-extinguishers, as described in chapter 90 of this code, fire axes, and pike poles shall be installed in every office, financial, sales, storage, and manufacturing unit as follows:

Office and financial units. One standard fire-extinguisher on each floor for each two thousand square feet of floor area of such floor; provided, however, that in any building, which is equipped with a standard system of automatic sprinklers, one such standard fire-extinguisher shall be provided for each four thousand square feet of floor area.

Sales units. Two standard fire-extinguishers, two fire axes and two pike poles on each floor for the first two thousand square feet of floor area and at least one additional standard fire-extinguisher for each additional five thousand square feet of floor area or fraction thereof.

Storage and manufacturing units. One standard fire-extinguisher and one standard fire axe for each two thousand or less square feet of floor area; provided, however, that in any such building, which is equipped with a standard system of automatic sprinklers one standard fire-extinguisher and one standard fire axe shall be installed for each four thousand or less square feet. Wherever quantities of oils are stored or kept, the required extinguishers shall be of the foam type.

Exit Lighting and Signs

50-53. Every means of exit in a business unit shall have a system of electric lighting as required by chapter 66 for the normal illumination of exits.

50-54. Every business unit more than two stories in height shall have additional illumination in all exit connections as required by chapter 66 for additional illumination of exits.

50-55. In every office, financial, and sales unit more than one story in height, and every storage or manufacturing unit three stories or more in height, standard exit signs, standard directional signs, and standard fire escape signs illuminated by electricity shall be provided to mark the way of egress as required by chapter 66 for exit signs.

Violation of Chapter Provisions

50-56. Any person violating, or resisting or opposing the enforcement of any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 51

HAZARDOUS USE UNITS

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General Provisions

51-1. Every building, or part of a building, hereafter designed, erected, altered or converted for the purposes of a hazardous use unit shall comply with the general provisions in this code pertaining to buildings and in addition shall comply with the special provisions of this chapter. The requirements of chapter 50 shall apply to any hazardous use units used for office, storage or manufacturing purposes, except as otherwise provided in this chapter. Every existing building having an occupancy which would be classed as a hazardous use unit by the building provisions of this code shall be so classified with respect to any additions, increase in capacity, or alteration thereof, and shall conform to the provisions of this chapter and of sections 60-1 to 60-4 for existing buildings and structures.

51-2. The following terms used in this chapter are hereby defined as follows:

Corrosive acid storage building. A building, or part of a building, designed, intended or used for no purpose other than that of the storage of hydrochloric acid, nitric acid, sulphuric acid, hydrofluoric acid or any other corrosive acid.

Dry cleaning building. A building, or part of a building, designed, intended or used for no purpose other than the purpose of dry cleaning or spotting as defined in chapter 121 of this code.

Dry cleaning room. A room for the purpose of carrying on dry cleaning processes in a dry cleaning building.

Explosives. Any chemical compound or mechanical mixture which is commonly used or intended for the purpose of producing an explosion, or which contains any oxidizing and combustible units, or other ingredients, in such proportions, quantities or packing that an ignition by fire, by friction, by concussion, by percussion or by detonator of any part of the compound or mixture may cause such a sudden generation of highly heated gasses that the resultant gaseous pressures will be capable of producing destructive effects on contiguous objects or of destroying life or limb and shall include articles subdivided as follows:

(a) Unlawful explosives. Any liquid nitroglycerin, any high explosive containing more than sixty per cent of nitroglycerin, any high explosive which permits the leakage of nitroglycerin under any conditions; any nitrocellulose in a dry condition in a quantity of more than ten pounds in one exterior package; any fulminate of mercury in a dry condition; any fulminate of other metals in any condition except as a component of articles not otherwise prohibited; any fireworks which combine an explosive and a detonator or any fireworks prohibited by the laws of the state or by other sections of this code. No person shall have, keep or use any of these unlawful explosives within the city.

(b) Authorized explosives. Black powder high explosives not otherwise prohibited by the foregoing subparagraph, blasting caps, smokeless powder, wet fulminate or mercury, ammunition for cannon and small arms, explosive projectiles, railway torpedoes and flares, marine and highway flares, detonating fuses, primers, fuses and safety squibs. Such explosives may be stored or used in accordance with the provisions of this code.

Fireworks. Any fireworks which are intended to be used for any public display or private use not otherwise prohibited by the laws of the state or any ordinances of the city.

Flammable liquids. All flammable liquids shall be divided into four classes according to the flash point as follows:

Class I. Liquids with flash point below twenty-five degrees Fahrenheit, four degrees below zero Centigrade, closed cup tester.

Class II. Liquids with a flash point above that for class I and below seventy degrees Fahrenheit, twenty-one degrees Centigrade, closed cup tester.

Class III. Liquids with a flash point above that for class II and below one hundred eighty-seven degrees Fahrenheit, eighty-six degrees Centigrade.

Class IV. Liquids with a flash point above that for class III. The flash points shall be as determined with testers approved by the bureau of fire prevention, but the cup tester, standardized by the United States bureau of standards shall be authoritative in case of dispute. All tests shall be made in accordance with the methods approved by the bureau of fire prevention. Flammable liquids shall include:

Class I
Ether
Carbon Bisulphide
Gasoline
Naphtha
Benzol
Collodion
Acetone
Liquefied Petroleum Gas
Class II
Alcohol
Amyl Acetate
Toluol
Ethyl Acetate
Methyl Acetate
Class III
Kerosene
Amyl Alcohol
Turpentine
Fuel Oil
Whiskey
Class IV
Petroleum

Any fluid, manufactured liquid or fluid commodity, such as paint, varnish or lacquer, dryer, or cleaning solution or polishing liquid which contains flammable liquid shall be classed in accordance with this section according to the flash point of the mixture.

Flammable liquid container. Any can, bucket, barrel, tank or other vessel in which flammable liquids are stored or kept for sale.

Fume or explosion hazard building, room and gases:

(a) Fume or explosion hazard building. A building, or part of a building, designed, intended or used for the purpose of manufacturing, compressing or storing any fume hazard gas or any explosion hazard gas, either at a pressure of more than fifteen pounds per square inch or in a quantity of more than twenty-five hundred cubic feet.

(b) Fume or explosion hazard room. A room designed, intended or used for any of the purposes described under the preceding paragraph and which is located in a building other than a fume or explosion hazard building.

(c) Fume hazard gases. Ammonia gas, chlorine gas, phosgene gas, sulphur dioxide gas and any other gas which, as determined by the committee on standards and tests, is in fact a poisonous, irritant or corrosive gas and is not susceptible to fire or explosion, shall each be defined as a fume hazard gas.

(d) Explosion hazard gas. Acetylene gas, ammonia gas, ether gas, ethyl chloride gas, ethylene gas, liquefied hydrocarbon gases, liquefied petroleum gases, hydrogen gas, illuminating gas, methyl chloride gas and any other gas which is a poisonous, irritant or corrosive gas and is also a gas susceptible to explosion under any condition, or is not a poisonous, irritant or corrosive gas, but is a gas susceptible to explosion under any condition shall each be defined as an explosion gas.

Grain elevator, malt house and similar building. A building designed, intended or used for the purpose of receiving, storing, delivering, working with or treating grain in bulk.

Grinding or dust producing room. A room containing a machine or device for grinding, pulverizing, buffing or polishing, which produces dust, lint, shavings or other fine particles of matter liable to spontaneous ignition or explosion, or a room in which it is proposed to install any such machine or device.

Hazardous chemical storage building. A building, or part of a building, designed, intended or used for no purpose other than that of the storage of any such chemical or material as named in the definition of "hazardous chemical room" in the following paragraph.

Hazardous chemical room. A room designed, intended or used for the purposes of storing or using aluminum powder, calcium carbide, calcium phosphide, metallic potassium, metallic sodium, phosphorus, sodium peroxide or any other chemical or material which, as determined by the committee on standards and tests will in fact create an equally or more serious flame hazard, or an equally or more serious explosion hazard, or an equally or more serious flame and explosion hazard when coming in contact with water or moisture.

Highly flammable material storage building. A building, or part of a building, designed, intended or used for the purpose of storing hay, straw, broom corn, hemp, jute, sisal, moss, sawdust, other wood dust, shavings, excelsior, fiber, hair or any other similar material which involves an equally or more serious flame hazard.

Highly flammable material storage room. A room designed, intended or used only for the purposes described under the preceding paragraph, which is located in a building other than a highly flammable material storage building.

Highly hazardous material, product, article or substance. Any material, product, article or substance which is liable to burn with rapidity, or while burning to emit poisonous or noxious fumes or while burning to cause explosions.

Magazine. A building, or part of a building, designed, intended or used for the storage of an explosive or fireworks, other than a building which is otherwise classified under this chapter:

(a) First-class magazine. Every magazine which contains more than one hundred pounds of explosives or fireworks and has a content of not more than twenty-five hundred pounds of explosives or fireworks.

(b) Second-class magazine. Every magazine of a size which will contain not more than one hundred pounds of explosives or fireworks.

Nitrocellulose. Any substance, material or compound composed in whole or in part of soluble cotton or similar tetra-nitrate or higher nitrate of cellulose, including pyroxylin, plastic, celluloid, fibroid, viscoloid, pyralin and all similar substances, materials and compounds, including both new and reclaimed substances.

Nitrocellulose building. A building, or part of a building, designed, intended or used for no purpose other than the nitration, manufacture or storage of nitrocellulose, or a building in which nitrocellulose is nitrated, or a building in which discarded scraps of nitrocellulose are reclaimed.

Nitrocellulose product. Any article or product either in the process of manufacture or fabrication or in the finished or completed state, which is composed wholly or in part of nitrocellulose, including positive or negative nitrocellulose motion picture film, nitrocellulose photographic film, nitrocellulose X-ray films, or pens, pencils, toilet articles, novelties or other articles of products composed either wholly or partly of nitrocellulose, excepting flammable liquids otherwise classified.

Nitrocellulose products building. A building, or part of a building, designed, intended or used for no purpose other than the manufacture, fabrication, assembly, completion, receiving, shipping, distributing or storing of either finished or unfinished nitrocellulose products or parts of such products.

Nitrocellulose and nitrocellulose products, weight. The weight of the nitrocellulose only, not including the weight of any article or material to which the nitrocellulose is attached or fastened nor the weight of any wrapping or packing material, carton or other shipping container.

Paint mixing or spraying room. A room designed, intended or used for the purpose of mixing or spraying more than ten gallons of paint, varnish, lacquer, enamel or other such volatile or flammable liquid or liquid containing any volatile flammable substance in solution or suspension, during any twenty-four hour period.

Smoke house. A building, or part of a building, designed, intended or used for no purposes other than that of smoking meats or fish.

Smoke room. An inclosure designed, intended or used for the smoking of meats or fish, located within any building other than a smoke house.

Standard drying room. A room designed, intended or used for the purpose of drying clothing, textiles, starch, candy, plaster work, or other articles or materials, which do not give off explosive or flammable vapors during the drying process. [Amend. Coun. J. 6-5-40, p. 2653.]

51-3. The following types of occupancy shall be included as hazardous use units as defined in section 40-12:

Asphalt, tar, pitch, and resin heating rooms
Corrosion acid storage buildings
Dry cleaning buildings
Fume or explosion hazard buildings and rooms
Grain bleachers
Grain elevators
Grinding and dust producing rooms
Hazardous chemical rooms and storage buildings
Highly flammable material storage buildings and rooms
Japanning and enameling rooms
Lumber dry kilns
Malt houses and similar buildings
Magazines
Motion picture trial exhibition rooms
Motion picture studios
Nitrocellulose buildings
Nitrocellulose products buildings and rooms including certain rooms in motion picture film exchanges
Paint mixing or spraying rooms
Picker or shredder rooms

Rooms for storage or baling of waste paper
Smoke houses and smoke rooms
Standard drying rooms
Industrial properties with occupancies such as:

- Artificial flowers
- Artificial and imitation leather
- Carpet linings
- Cereal, food, flour, grist and starch mills
- Cotton batting
- Cotton clothing
- Cotton rag sorting
- Cotton waste
- Explosives
- Feather renovating
- Fireworks
- Flammable liquids
- Shoddy mills
- Straw goods
- Sugar grinding
- Varnish
- Woodworking

51-4. Hazardous use units shall, for the purposes of this chapter, be further classified and sub-divided as hazardous use general units, hazardous use storage units and hazardous use manufacturing units.

Hazardous use general units. A hazardous use general unit shall include any hazardous use unit other than a hazardous use storage unit and other than a hazardous use manufacturing unit.

Hazardous use storage units. A hazardous use storage unit shall include any hazardous use unit designed, intended or used for the storage of high hazard materials, high hazard products and all other high hazard storage uses not otherwise classified under this chapter. Hazardous use storage units shall include among others:

Corrosive acid storage buildings
Fume or explosion hazard buildings and rooms for no other purpose than storage
Grain elevators
Hazardous chemical storage buildings
Malt houses and similar buildings
Highly flammable material storage buildings and rooms
Magazines
Nitrocellulose buildings
Nitrocellulose products buildings and rooms for no purpose other than storage
Rooms for the storage of waste paper.

Hazardous use manufacturing units. A hazardous use manufacturing unit shall include any hazardous use unit designed, intended or used for manufacturing purposes, including any operation or process incident to the producing, fabricating, assembling, developing, moulding, pressing, preparing or adapting for use, repairing or refinishing of any high hazard material, high hazard product, article or substance or high hazard parts or appliances of any product or article not otherwise classified under this chapter. Hazardous use manufacturing units shall include, among others:

Fume or explosion hazard buildings or rooms in which any manufacturing is done.
Grain bleachers
Grinding and dust producing rooms
Japanning and enameling rooms
Lumber dry kilns

Nitrocellulose buildings

Nitrocellulose products buildings and rooms in which any nitrocellulose manufacturing is done

Paint mixing or spraying rooms

Picker or shredder rooms

Smoke houses and smoke rooms

Standard dry rooms and other drying rooms for the drying of articles or materials which will give off explosive or flammable vapors during the drying process

and industrial properties with occupancies such as those named under section 51-23.

51-5. No corrosive acid storage building, hazardous chemical storage building, dry cleaning building, grain bleacher, grain elevator, malt house or similar building, nitrocellulose building or nitrocellulose products building shall be located nearer than one hundred feet to any building in which there is a hospital, theater, public assembly unit, open air assembly unit, church or school, except as otherwise provided by sections 51-8 to 51-18.

51-6. The location of any hazardous use unit shall conform to such regulations and limitations of other provisions of this code applicable thereto and more restrictive than the building provisions of this code. Frontage consents shall be required for certain occupancies as provided by chapter 59 of this code.

51-7. Every court which is necessary in order to obtain windows or other openings for required natural lighting and natural ventilation shall be made to conform with the provisions of section 51-6 for such a court in a business unit, except as otherwise provided in this chapter.

Safety Clearance

51-8. Whenever in the following sections the words "safety clearance" are used, said words shall be construed to require a space open its entire area to the sky, and which shall be continuous on all sides of the building or structure; or between such building and any other building, or property dividing lot line, or the opposite side of every adjoining and adjacent public way or public park, or any main line of a steam, electric, elevated railway or any other railway right of way.

51-9. At least one side of every dry cleaning building in which a flammable solvent having a flash point below one hundred forty degrees Fahrenheit (closed cup tester) is used shall have a safety clearance of not less than fifteen feet, and every side which is nearer than fifteen feet to another building or structure, or to a lot line, shall be a solid wall without any opening. [Amend. Coun. J. 6-5-40, p. 2653.]

51-10. The minimum required safety clearance for flammable liquid storage tanks above ground, in reference to any building or lot line, shall be regulated according to capacity as follows:

Combined capacity of tanks (gallons)	Minimum distance to line of adjoining property which may be built upon (feet)
1 to 15,000	10
15,001 to 30,000	20
30,001 to 60,000	30

Each three thousand gallons additional, one foot additional, with a maximum requirement of two hundred fifty feet, provided, however, that for tanks containing liquids having a flash point above 175 degrees Fahrenheit (closed cup tester) the maximum requirement shall be 150 feet. The safety clearance between tanks shall be regulated according to capacity as follows:

Capacity of the larger of the two tanks (gallons)	Minimum clearance between tanks (feet)
300 or less	3
500	3
1,000	3
8,000	3
12,000	3
18,000	3
24,000	3
30,000	5
48,000	10
75,000	10
100,000	13
150,000	15
200,000 500,000	Distance equal to the diameter of the greatest horizontal dimension of the larger tank.

A tolerance of ten per cent in capacity shall be allowed in all tanks. The minimum required safety clearance for flammable liquid storage tanks above ground, required by this section may be reduced to the minimum safety clearance between tanks, as provided above, whenever such tank is individually diked and protected by fire walls of four hour fire-resistive construction, extending not less than three feet above and beyond each tank, and provided with a fender or return wall for each such fire wall of the same height and thickness at each end and extending not less than three feet on each side of such fire wall.

Nothing in this section shall be interpreted or construed to apply to any group of oil-storage tanks, every part of which group has an open space of not less than 1,000 feet, continuous on all sides of the group of tanks, or between such group of tanks and any building or property dividing line, or the opposite side of each adjoining and adjacent public way or public park, or any main line of a steam, electric, elevated railway or any other railway right-of-way, provided that the provisions of this paragraph shall apply only to oil storage tanks storing liquids above the ground, and which liquids have a flash point above 150 degrees F. This paragraph shall not apply to any liquids stored under the ground. [Amend. Coun. J. 10-31-40, p. 3343; 2-26-41, p. 4337.]

51-11. All distilling and condensing plants, except as provided in section 51-103 shall have a clearance of not less than three hundred feet in reference to any building or lot line.

51-12. Any building, or group of buildings, used exclusively for the purpose of handling, distributing or storage of flammable liquids shall be exempt from the safety clearance requirements of this chapter with respect to any other building or structure, or storage tank within the same group and used for similar purposes, except as provided by section 51-10 for clearance between tanks.

51-13. Every building hereafter designed, erected, altered or converted for the purpose of manufacturing or storing for resale, any fume or explosion hazard gas in a quantity exceeding twenty-five hundred cubic feet during any twenty-four hour period shall be free standing and isolated by a safety clearance of not less than two hundred fifty feet. Every building hereafter designed, erected, altered or converted for the purpose of manufacturing, compressing or storing acetylene gas at a pressure of more than fifteen pounds per square inch, shall be free standing and isolated by a safety clearance of not less than two hundred fifty feet.

Any building or group of buildings used for the purpose of the production, distribution or storage of any fume or explosion hazard gas, shall be exempt from the provisions of the preceding paragraph with respect to any other building or structure within the same group and used for similar purposes. Any public utility engaged in the production, distribution or storage of illuminating gas shall also be exempt from the provisions of the preceding paragraph, except as prohibited or otherwise regulated in other provisions of this code. Nothing in this section shall be construed as prohibiting the storage for use on the premises of acetylene gas in cylinders in a quantity of twenty-five hundred cubic feet or less or the generation of any such gas for use on the premises, in a quantity of twenty-five hundred cubic feet or less at a pressure of fifteen pounds or less per square inch, or the use of any number of cylinders of any such gas while in actual use or attached ready for use in any industrial process. Any mechanical refrigerating system built in accordance with chapter 85 shall be exempt from the provisions of this section.

51-14. Every grain bleacher shall be separated by a distance of not less than six feet from any other building; provided, however, that no grain bleacher shall be nearer than twenty-five feet to any window, or doorway of any other building unless such window is a type A window, or unless such doorway is provided with a sixty minute fire-resistive door.

51-15. Every grain elevator, malt house and similar building shall be so situated that it will not be so hazardous as to constitute a nuisance or be a menace to the safety of the public or to the adjacent property.

51-16. Every building hereafter designed, erected, altered or converted for the purpose of storing more of any hazardous chemical than the limited quantity provided for such chemical in section 129-71 shall be isolated by a safety clearance of not less than one hundred feet except as otherwise provided by this section.

Fireproof or semi-fireproof construction. Every such hazardous chemical building of fireproof or semi-fireproof construction shall be isolated from any other building on the same premises by a safety clearance of not less than ten feet; provided, however, that such safety clearance shall not be required for any such building having no openings within ten feet of any openings in any other wall or building on the same premises, or for any such building which is separated from any adjoining building by a standard fire separation without openings therein; and provided further that calcium carbide in excess of six hundred pounds may be stored in any building containing an acetylene generator when such building is built as required by sections 51-13 and 51-26 for fume or explosion hazard buildings.

Heavy timber or ordinary construction. Every such hazardous chemical building of heavy timber or ordinary construction shall be isolated from any other building on the same premises by a safety clearance of not less than twenty feet; provided, however, that such safety clearance will not be required for any such building having no openings within ten feet of any openings in any other wall or building on the same premises, or for any such building which is separated from any adjoining building by a standard fire separation without openings therein; and provided further that calcium carbide in excess of six hundred pounds may be stored in any building containing an acetylene generator when such building is built as required by sections 51-13 and 51-26 for fume or explosion hazard buildings.

51-17. *Without barricades.* Every magazine for explosives shall be isolated by a safety clearance according to capacity as follows:

Capacity of magazine (pounds)	At surface of ground (feet)
100 or less	100
101 to 500, inclusive	400
501 to 1000, inclusive	600
1001 to 1750, inclusive	800
1751 to 2500, inclusive	1000

Such capacity shall be confined to the cubic contents allowable for such quantity of the particular type of commercial explosives for which a permit or license has been issued, in accordance with the provisions of this code regulating such use. Every magazine for fireworks shall be isolated by a safety clearance of not less than one-half the safety clearance required by this paragraph for explosives, for any like given quantity in pounds.

With barricades. Whenever a magazine for explosives is screened by natural features of the ground, or by an artificial mound of solid earth of such height that any straight line drawn from the top of any side wall of such magazine to any point twenty-five feet above the nearest lot lines, or to the highest point of any building within the radius to be protected, will pass through such intervening earth barrier, then such minimum required horizontal safety clearances required by the first paragraph of this section may be reduced fifty per cent; provided, however, that for every one foot such magazine is depressed below the street grade at a quarry or other pit, such minimum required horizontal safety clearance may be reduced ten feet; provided further, that such lateral safety clearance shall be not less than twenty-five feet in any case.

51-18. Every nitrocellulose building shall be free standing and isolated by a safety clearance computed at the rate of five feet per one thousand pounds or fraction thereof of nitrocellulose manufactured or reclaimed; provided, however, that such safety clearance shall in no case be less than fifty feet; and provided further, that the requirements of this paragraph shall not apply to any buildings in which twenty-five pounds or less of nitrocellulose are manufactured or reclaimed during any twenty-four hour period.

Construction

51-19. Every interior doorway from any room or part of a hazardous use unit, which is required to have an enclosure of one hour fire-resistive or more fire-resistive construction, shall have a fire door as provided by chapter 69 for such unit, which is required to have an enclosure of one hour fire-resistive or more fire-

51-20. The maximum capacity of a standard fireproof cabinet shall be two hundred pounds of nitrocellulose material or nitrocellulose product, or other high hazard material for which such vault is intended. All standard fireproof cabinets shall be constructed of metal. The bottom, top and sides shall be made of sheet metal not less than No. 18 U. S. standard gauge in thickness, and such cabinet shall be double walled with not less than one and one-half inches air space between the double walls. All joints in the sheet metal shall be riveted or welded. All doors shall be of construction equal to the cabinet, and shall have a three point lock and self-closing device. Any standard fireproof cabinet having more than one compartment shall have a separate partition constructed of not less than No. 18 U. S. standard gauge sheet metal, double walled, with an air space not less than one and one-half inches between the surface thereof.

51-21. *General.* The walls, floor and ceilings of a standard fireproof vault, whenever such a room is required by this code, shall be built of reinforced concrete or masonry of not less than three hours fire-resistive construction. The distance from the floor to the ceiling of a standard fireproof vault shall not exceed eleven feet. Where a standard fireproof vault is located within any building the cubical contents of such standard fireproof vault shall not exceed seven hundred fifty cubic feet. Where a standard fireproof vault is located outside of a building so that a safety clearance of not less than five feet is provided on not less than three sides of such fireproof vault, the cubical contents of such vault shall not exceed fifteen hundred cubic feet. Nothing in this chapter shall be construed as prohibiting more than one standard fireproof vault in any building or structure or on any lot or plot of ground. All openings in the floors, walls or ceilings of a standard fireproof vault, except required vent flue openings and window openings for ventilation, shall be equipped and protected with a standard fire door of the automatic type and shall have as its actuating mechanism to close such door, a thermostatic releasing device. No wood floor, wood racks, wood shelves, or any other combustible material other than the substance for which any standard fireproof vault is intended shall be allowed or permitted in such vault. Shelves or racks used to support the material stored in vault shall be of metal and of open construction, so arranged as to permit water from the sprinkler heads to pass between container or packages.

Flammable liquids and acids. Wherever a standard fireproof vault is used for the storage of flammable liquids or corrosive acids there shall be a sill at every doorway thereto, constructed of concrete and of sufficient height to provide a liquid tight basis capable of retaining one and one-half times the total quantity of liquid kept or stored in such vault. All floor drains in a vault used for storing or keeping flammable liquids or corrosive acids shall have no connections with the drainage system of the building, but shall be arranged to drain to a location outside of the building remote from all connections or drains to the sewer system.

51-22. Every room hereafter designed, erected, altered or converted for the purposes of heating asphalt, tar, pitch or resin by means of direct heat shall have an enclosure of not less than two hour fire-resistive construction, of solid masonry or reinforced concrete. Every doorway in any such room shall have a sill of sufficient height and the floor and walls of the room shall be so constructed as to form a basin which will confine within the room, one and one-half times the maximum amount of asphalt, tar, pitch or resin in liquid form, for which accommodations are provided in the room. Every inside doorway connecting any such room with another room shall be provided with a forty-five minute fire-resistive door.

51-23. Every building, or part of a building, designed, erected, altered or converted for the purposes of a cereal mill, feed mill, flour mill, grist mill, or starch mill and in which more than five hundred pounds of any cereal, feed, flour, grist or starch is produced during any twenty-four hour period shall be of fireproof or semi-fireproof construction.

51-24. Every corrosive acid storage building shall be of fireproof or semi-fireproof construction and shall be without any basement, except a basement provided and used for purposes other than that of the storage of corrosive acid.

51-25. Every dry cleaning building in which a flammable solvent having a flash point below one hundred forty degrees Fahrenheit (closed cup tester) is used shall be of fireproof or semi-fireproof construction, with all walls, both exterior and interior, of solid masonry or reinforced concrete construction the same as required for a standard fire division wall. There shall be no basement or mezzanine in any such building. The surface of the first floor shall be higher than any walk, pavement or ground adjoining the building, and the first floor construction shall be such that there will be no air space or void in or beneath it. There shall be no doorway, window or other opening between any two dry cleaning rooms. Every doorway of any such building shall be provided with a non-combustible door and every window thereof shall be a type A window.

Dry cleaning systems utilizing a solvent having a flash point of one hundred forty degrees Fahrenheit and above (closed cup tester) may be employed in any business unit: Provided, that the equipment installed therein shall conform to the Regulations of the National Board of Fire Underwriters for Safeguarding Dry Cleaning and Dry Dyeing Plants, published in its pamphlet No. 32 dated August 15, 1936, for the class designated therein as Class II; provided further, that in buildings of multiple use such dry cleaning systems shall be separated from other occupancies by construction of two hour fire-resistive value; provided further, that doorways communicating with other occupancies or with a public corridor are provided with sixty minute fire-resistive doors; provided further, that rooms in which such systems are employed shall have windows in area equal to not less than ten per cent of the floor area; provided further, that such windows shall be hung off-center and made to operate by rate-of-rise device so that the sash will drop outward in the event of fire or explosion; provided further, that such windows shall open to a street, alley, court or other space open to the sky; and provided further, that no such dry cleaning system shall be located in any dwelling, place of public assembly, or in any part of a building used as a retail store in which more than two salespersons are employed.

Dry cleaning systems in which solvents of the chlorinated hydrocarbon type are used may be employed in any business unit: Provided, that such system is so constructed as to prevent the escape of any vapors into the atmosphere of the room, or shall be enclosed within air tight partitions, immediately surrounding the system, so as to prevent the escape of such vapors beyond the enclosed space; provided further, that in any case where such systems are used, adequate ventilation capable of changing the air in the room every three minutes shall be supplied; provided that such systems shall exhaust to the outside atmosphere, and the exhaust outlet shall not be closer than twenty feet to the opening of any building; and provided further, that no such dry cleaning system shall be located in any dwelling or place of public assembly. [Amend. Coun. J. 6-5-40, p. 2653.]

51-26. *General.* Every fume or explosion hazard building shall be without any basement, except such a basement as is permitted under section 51-33 for a hazardous chemical storage building.

Fume hazard gases. Fireproof, semi-fireproof heavy timber or ordinary construction shall be used for any building in which any fume hazard gas is manufactured, compressed or stored; provided, however, that a building may be of any type of construction permissible respectively for a manufacturing unit or a storage unit under sections 50-5 to 50-13, where any such gas is permitted to be stored or used on the premises. Every such building of heavy timber or ordinary construction shall be not more than one story above grade in height and shall have no mezzanine, unless such building is equipped throughout with a standard system of automatic sprinklers.

Explosion hazard gases. Fireproof or semi-fireproof construction shall be used for any building in which any explosion hazard gas is manufactured, compressed or stored; provided, however, that a building may be of any type of construction permissible respectively for a manufacturing unit or a storage unit under sections 50-5 to 50-13, where any such gas is permitted to be stored or used on the premises.

Refrigerating systems. Any mechanical refrigerating system built in accordance with the provisions of chapter 85 shall be exempt from the provisions of this section.

Gas holders. It shall be unlawful to take out of service any gas holders containing explosion hazard gases, or to make any connections thereto within the city without first notifying the commissioner of buildings twenty-four hours in advance, and without first emptying and purging such gas holders of all explosive gases, and without first making a physical disconnection all connecting piping, taking out sections thereof to make such disconnections. Before making such repairs, the contents of the gas holders shall be tested and the analysis of the mixture of air or inert gases therein shall be recorded and reported to the commissioner of buildings. Every such gas holder or tank, containing more than twenty-five hundred cubic feet of gas, shall be inspected at least once every five years by a recognized authority, employed by the owner and approved by the commissioner of buildings, and a report of all such inspections showing the condition of the said gas holder or tank, together with a statement of necessary repairs and the further statement that such repairs have been made and that the said gas holder or tank is in a good and safe condition with an expectancy that this condition will endure for the succeeding term of five years, shall be submitted to the commissioner of buildings. A non-corrosive metal tag containing the date of every such inspection and approval shall be attached to each such gas holder following every such inspection. The provisions of this paragraph shall not apply to cylinders or containers meeting the requirements of the interstate commerce commission regulations for interstate shipments.

51-27. *General.* Every fume or explosion hazard room in a building of fireproof or semi-fireproof construction shall have an inclosure of two hour fire-resistive construction, except as otherwise provided under this section. Every such room in a building of other than fireproof or semi-fireproof construction shall be enclosed by not less than one hour fire-resistive construction; provided, however, that the requirements of paragraphs (b) and (c) of this section shall prevail where inconsistent with this paragraph.

Water purifying equipment. No corrosive, explosive, flammable, irritant, poisonous, toxic or other noxious gas in a quantity exceeding ten pounds, whether in a container, cylinder, piping or other water purifying equipment shall be permitted in any church, public assembly unit or theater. All containers, cylinders, piping or other equipment containing more than ten pounds of such gases named in this section in any other building, shall be located within a room or space having a four hour fire-resistive inclosure. Any such room shall have no opening except to an open court, private alley, public way, or other open space not less than one hundred square feet in area. Nothing in the provisions of this section shall be construed as prohibiting the location of such equipment in the same room with a furnace, boiler, or other heat producing unit or incinerator, if such room is made to comply with the provisions of this section.

Cooling and refrigerating equipment. Any room or space used for cooling or refrigerating equipment shall conform to the requirements of chapter 85 for refrigerating systems.

51-28. Every grain bleacher shall be of fireproof construction. No combustible construction shall be used between a grain bleacher and any other building.

51-29. Every grain elevator, malt house and similar building shall be of fireproof construction.

51-30. Every grinding or dust producing room, paint mixing or spraying room and every room containing a japanning or enameling dip tank, vat, or japanning oven located in any building other than a building of fireproof or semi-fireproof construction, which is also equipped throughout with a standard system of automatic sprinklers, shall be constructed in accordance with the requirements of this section. Any such room, with a floor area of not more than six hundred square feet, shall have a floor of any type of construction permitted for the building in which located and shall have both walls and ceiling of one hour fire-resistive construction. Any such room, with a floor area of more than six hundred square feet and not more than twelve hundred square feet, may have a floor of any type of construction permitted for the building in which located, and shall have both walls and ceiling of two hour fire-resistive construction. Any such room with a floor area of more than twelve hundred square feet, shall be separated from every other part of the building by not less than four hour fire-resistive construction. No such rooms shall have any opening except a doorway or doorways between such room and any other part of the building. Every doorway through any such wall or separation shall be provided with a door of the character required by chapter 69 for fire doors. Nothing in this section shall be construed as prohibiting or preventing the installation of non-combustible piping or conveyors or similar dust-tight inclosed mechanical devices between floors or stories in such rooms or buildings.

51-31. Every hazardous chemical room, other than a vault for the storage of a hazardous chemical, shall be separated from all other parts of the building by a standard fire separation, with no window or other opening, except a doorway or doorways between such vault and any other part of a building.

51-32. Every vault for the storage of hazardous chemicals shall be a dry, waterproof, standard fireproof vault and not more than four vaults for such purpose shall be permitted in any building. No such vault shall be located in any floor or building in which prohibited under section 51-66.

51-33. Fireproof, semi-fireproof, heavy timber or ordinary construction shall be used for any hazardous chemical storage building. Every such building of heavy timber construction shall be not more than two stories in height. Every such building of ordinary construction shall be not more than one story in height and shall have no mezzanine. Every such building of any type of construction shall be without any basement, except a basement provided and used solely for the purposes of a heating plant for the building, which shall be separated from every other part of the building by a standard fire separation and shall have no doorway, window or other opening between such space and any other part of the building. Every such building shall be so constructed as to be dry.

51-34. A highly flammable material storage building may be of any type of construction permitted under sections 50-5 to 50-13 for a storage unit.

51-35. Every room in which provisions are made for the storage of more than five thousand cubic feet of any highly flammable material shall be separated from every other part of the building by a standard fire separation; and where such capacity is five thousand cubic feet or less and is more than twenty-five hundred cubic feet of any such material, the said separation shall be not less than two hour fire-resistive construction; and where such capacity is twenty-five hundred cubic feet or less of any such material, the said separation shall be not less than one hour fire-resistive construction. Every doorway through any such standard fire separation shall be provided with a double standard fire door, and every doorway through any such separation of two hour fire-resistive value shall be provided with a forty-five minute fire-resistive door and every doorway through any such separation of one hour fire-resistive value may be provided with a combustible door.

51-36. A kiln or room designed, erected, altered or converted for the purposes of drying lumber, wood products, or wooden articles by artificial heat shall have an inclosure of two hour fire-resistive construction, if it has a floor area of five hundred square feet or less, and of three hour fire-resistive construction if it has a floor area of more than five hundred square feet. No such kiln or room shall have any opening except a doorway or doorways between such room and any other part of the building. Every doorway into any such room shall be provided with a door of the character as required by chapter 69 of this code.

51-37. *First-class magazines.* Any first class magazine for the storage of explosives shall not exceed one story, or fifteen feet in height, and such magazine shall not have any basement or any mezzanine. Every first-class magazine shall be of non-combustible construction and shall have exterior walls of solid brick masonry laid in mixed mortar No. 3 or No. 4; provided, however, that walls may be constructed of wood sheathing and wood studs with all space between the studs filled with dry sand for a thickness of not less than five and one-half inches and covered on the outside surface with non-combustible materials. There shall be no openings in any walls except a doorway, which shall be provided with a non-combustible or metal-clad door.

Second-class magazine. Any second-class magazine shall be of non-combustible construction; provided, however, that the walls and roof may be of wood, metal-clad on the outside surface or covered with fire-retarding roof coverings.

51-38. *General requirements.* Any person lawfully engaged in the business of manufacturing, dealing in, selling, leasing, renting or exchanging motion picture films shall have the right to project pictures from nitrocellulose films by means of motion picture machines for exhibition to prospective purchasers, renters or lessees of films, in a room meeting the requirements of this chapter in respect thereto, which room shall not be required to conform to the special provisions in the building provisions of this code, governing theaters, public assembly units or other places where motion pictures are permitted to be shown.

Exhibition room. Any motion picture trial exhibition room shall have a floor of the same type of construction as required for the building in which located and shall have both walls and ceiling of one hour fire-resistive construction.

Projection room. Every motion picture trial exhibition room shall have a projection room, which shall have an inclosure of the same character as required by sections 53-16 and 53-17 for a projection block in a theater. If the floor of the projection room is above the level of the floor of the exhibition room the projection room shall be supported on structural members of metal, reinforced concrete or solid masonry. Every opening in such room for the purposes of picture screen observation or operation of a projector shall be equipped with a closure such as required by section 53-33 for a projection room in a theater.

51-39. Every nitrocellulose building shall be of fireproof or semi-fireproof construction.

51-40. Every nitrocellulose room shall have a separation between it and any other room permitted in the same building of not less than two hour fire-resistive construction.

51-41. A nitrocellulose products building, not more than one story above grade in height, shall be of any type of construction permissible under sections 50-5 to 50-13 for a manufacturing unit. Ordinary construction shall be used for any nitrocellulose products building not more than two stories above grade in height. Heavy timber construction, or a superior type construction, shall be used for any nitrocellulose products building three stories above grade in height. Semi-fireproof construction or fireproof construction shall be used for every nitrocellulose products building more than three stories above grade in height. A basement shall be permitted in any nitrocellulose products building; provided, however, that no basement in any such building shall be designed, constructed, altered or converted for the purposes of manufacturing, fabricating, assembling, adapting, completing or storing any nitrocellulose product.

51-42. Every nitrocellulose products room shall have an inclosure of two hour fire-resistive construction, if it has a floor area of one thousand square feet or less and of three hour fire-resistive construction of solid masonry or concrete if it has a floor area exceeding one thousand square feet but not more than two thousand square feet; and of construction meeting the requirements for a standard fire separation if it has a floor area exceeding two thousand square feet; provided, however, that these requirements shall not apply to a standard fireproof vault intended for any of the purposes of such a room.

51-43. Every room used for the picking or shredding of any highly flammable material named under section 51-2 shall meet the requirements of section 51-54 for the construction of a special drying room. Any opening for a stock spout through the inclosure for any such room shall be provided with a fire door as required by chapter 69 of this code for a doorway through a separation of equal fire-resistive value.

51-44. Any building used exclusively for the production, distribution or storage of manufactured gas as a public utility shall be exempt from the requirements of this part of this chapter dealing with construction except the provisions of section 51-52 for tanks for flammable liquids; provided, however, that such buildings shall be constructed as provided by section 50-12 entirely of non-combustible materials, with interior framing members either with or without fireproof covering.

51-45. Every room for the drying of articles or materials, which will give off explosive or flammable vapors during the drying process, shall have an inclosure of the same character as required by section 51-41 for a nitrocellulose products room of the same area; provided, however, that an opening, or openings from any adjoining room for a conveyor may be provided in an inclosure for any such drying room if each such adjoining room is made to conform with the requirements of this section for such a drying room; and provided further, that if a system of collecting and disposing of the vapors produced in the drying room is provided, then the inclosure for the drying room shall be not less than one hour fire-resistive construction in any case, and the provisions of this section for an adjoining room in which there is a conveyor extending into the drying room shall not apply.

51-46. Every room designed, intended or used for the storage or baling of waste paper in a building of fireproof, semi-fireproof or heavy timber construction, shall have an inclosure of not less than two hour fire-resistive construction, with every doorway in such inclosure having a forty-five minute fire-resistive door, and every window therein a type A window. Every such room in a building of ordinary construction shall have walls and ceiling of not less than one hour fire-resistive construction.

51-47. Provisions shall be made in service or filling stations by grading driveways, or raising door sills or other means, to prevent gasoline spills or overflows from flowing into or under buildings.

51-48. (a) *Smoke houses.* Every smoke house shall be of fireproof or semi-fireproof construction, and no combustible material shall be used in the construction thereof.

(b) *Smoke rooms*

(1) General. Every smoke room thirty square feet or less in floor area, or having a volume of two hundred ten cubic feet or less, shall be inclosed with not less than three hour fire-resistive construction, and every smoke room of greater floor area or of greater volume shall be inclosed by a standard fire separation. No combustible material shall be used in the construction of any smoke room.

(2) Floor construction. Every smoke room thirty square feet or less in area, which is supported by the floor construction of the building in which located, shall be built upon a standard furnace foundation, meeting the requirements of section 80-8, installed on top of the building floor.

(3) Superimposed smoke rooms. For smoke rooms superimposed one above another, in a building of other than fireproof or semi-fireproof construction, the inclosing walls shall be supported by independent foundations and shall carry no floor or roof load other than a smoke room floor or roof load. Any floor separation between such rooms in a building of any type of construction may be an open grill work of metal designed for a uniformly distributed live load of seventy-five pounds per square foot. The ceiling or roof of the uppermost room shall be of fireproof construction regardless of the type of construction of the building in which located.

(c) *Fire pits.* Every fire pit for a smoke house or smoke room shall have a floor and walls of not less than four hour fire-resistive construction, except as otherwise provided for a fire pit in a portable smoke room under section 54-114.

(d) *Doors and frames.* Every doorway to a smoke house or smoke room shall be provided with a door formed of iron or steel not less than one hundred and nine thousandths inch thick, stiffened around all edges and crosswise at intervals of three feet or less in height with angles, tees or other iron or steel shapes. Every such door shall be hung in an iron or steel frame, not less in thickness at any point than three-sixteenths inch anchored to the wall construction.

(e) *Openings for trolleys.* It shall be permissible to provide an opening for a trolley in or above any door to a smoke house or smoke room; provided, however, that every such opening shall have an iron or steel cover of the same thickness as required for the door, and so equipped that in case of fire, it shall close automatically by the release of a fusible link or the actuation of a thermostatic device.

(f) *Smoke flues.* Every smoke flue for a smoke house or smoke room shall meet the requirements of chapter 76 of this code where applicable to the character of flue used, except as otherwise provided for a smoke flue for a portable smoke room under section 51-114.

(g) *Windows.* Any window provided in a smoke house or smoke room shall be a type A window.

51-49. It shall be permissible to install and use a smoke room having an inclosure of metal construction in lieu of the construction required under section 51-48.

Foundations. Every portable smoke room shall be built upon a standard furnace foundation as described in section 80-8; provided, however, that such a foundation shall not be required for a portable smoke room in a building of fireproof or semi-fireproof construction, unless there is a combustible finish on such floor.

Walls and ceilings. The walls and ceiling of every portable smoke room shall consist of an inner and outer shell of sheet metal, not less than three-eightieths inch thick, with riveted or welded seams and joints, secured to a rigid framework of suitable iron or steel shapes. The inner and outer metal shells shall be separated not less than one and one-half inches, the space between being filled solid with fused non-combustible insulating material not less than one and one-fourth inches thick.

Fire pits. The fire pit in every portable smoke room shall be entirely of metal and set upon legs with the bottom of the pit not less than two inches above the floor surface.

Smoke flues. Every smoke flue for a portable smoke room shall be a metal flue connected with a masonry chimney, or a metal flue extended through the roof of the building. Every metal smoke flue shall be formed of sheet metal not less than one-sixteenth inch thick, with riveted or welded seams and joints. Where a metal smoke flue is extended through combustible construction, the flue shall be passed through a double walled, ventilated metal sleeve as required by chapter 76 of this code.

Doors. Every doorway to any portable smoke room shall be provided with a door formed of sheet metal as required by section 51-48 for smoke rooms.

Clearances. No part of a wall or ceiling of any portable smoke room shall be located nearer to any combustible construction than is permitted under chapter 80 of this code for low pressure boiler breechings.

51-50. Every standard drying room for the drying of articles or materials which do not give off explosive or flammable vapors during the drying process shall have an inclosure of not less than one hour fire-resistive value.

51-51. In any special room for flammable liquids, the door openings to other rooms or buildings shall be provided with non-combustible sills, raised not less than six inches above the floor of such special room. Where the total quantity of class I and class II of liquids stored or handled in any room, does not exceed two hundred gallons, such room shall have floors, walls and ceilings of not less than one hour fire-resistive construction. Floors shall be arranged to drain toward the outside of the building. Where the total quantity of class I or class II flammable liquids stored or handled in any room exceeds two hundred gallons, but does not exceed four hundred gallons, all floors, walls and ceilings of such room shall be of not less than two hour fire-resistive construction. Where the total quantitv of class I or class II flammable liquids stored or used exceeds four hundred gallons, but does not exceed six hundred gallons, the floors, walls and ceilings of such room shall be of not less than three hour fire-resistive construction. Where the total quantity of class I or class II flammable liquids stored or used exceeds six hundred gallons, the floors, walls and ceilings of such room shall be of not less than four hour fire-resistive construction. Outside storage houses for the storage and handling of flammable liquids shall be constructed in accordance with this section. All door openings through the inclosures of such rooms into other rooms or buildings, shall have fire doors as required by chapter 69 of this code for such fire-resistive walls. The provisions of this paragraph do not apply to fuel oil storage tanks otherwise permitted by section 51-52.

51-52. Above ground tanks for flammable liquids shall be constructed throughout of open hearth steel or of wrought iron of a thickness in accordance with the following requirements:

Less than 1100 gallons capacity.

Capacity (gallons)	Minimum thickness of material (U. S. standard gauge)
1 to 60, inclusive	18
61 to 350, inclusive	16
351 to 560, inclusive	14
561 to 1100, inclusive	12

No open tank shall be used. Nothing in this chapter shall be construed as prohibiting the use of concrete tanks for the storage of liquids heavier than thirty-five degrees Baume gauge. All concrete tanks shall be constructed in accordance with the requirements of chapter 74 of this code.

Horizontal tanks containing over 1,100 gallons. Tanks having a diameter of six feet or less shall be made of not less than three-sixteenths inch steel. Tanks having a diameter of more than six feet and not exceeding eleven feet, six inches shall be made of not less than one-fourth inch steel.

Vertical tanks containing over 1,100 gallons. Vertical tanks having more than eleven hundred gallons capacity shall be so constructed of such material and so arranged as to have a factor of safety of not less than two and five-tenths. The minimum thickness of the shell or bottom shall be not less than three-sixteenths inch. The minimum thickness of roofs shall be not less than one-eighth inch. The tensile strength of the steel plate and the shearing strength of rivets shall be in accordance with the requirements of chapter 75 of this code. Tanks shall be riveted, welded or brazed and shall be caulked and made tight in a workmanlike manner. The top of tanks shall be securely fastened to top ring with joints having the same tightness as the joints between the rings. All iron or steel tanks shall be thoroughly coated on the outside with a heavy protective paint. Roofs or tops of tanks shall have no unprotected openings, and shall be firmly and permanently joined to the tank, and all joints shall be riveted and caulked, brazed or welded.

Pressure tanks. Pressure tanks shall be riveted, welded or brazed and shall be fastened, caulked or otherwise made tight so as to sustain safely a hydrostatic test at a pressure not less than double the pressure at which the tank is to be used. The top of the tank shall be securely fastened to the top ring with joints of equal tightness to the bottom rings. Tanks shall be covered with heavy protective paint. All pipe connections shall be made through flanges or metal reinforcement securely riveted, welded or bolted to the tank and made thoroughly tight. Pressure tanks, including top, sides and bottom, shall be constructed entirely of metal. All openings in such tanks shall be gas tight except the breather vent which shall be screened as provided in sections 51-78 to 51-89.

Foundations and grounding. All tanks shall be electrically grounded by resting directly upon moist earth or shall be electrically grounded to permanent moisture. No insulated connections shall be permitted. All steel work of reinforced concrete tanks shall be inter-connected and grounded as herein provided for tanks. Tanks more than one foot above the ground shall have foundations and supports of non-combustible material. No combustible material shall be permitted under or within ten feet of any above-ground storage tank; provided, however, that nothing in this chapter shall be construed as prohibiting wooden cushions under tanks. Unprotected steel is prohibited as a means of supporting tanks when such tanks are located fifty feet or less from loading or unloading points, buildings or storage of combustible substances or materials.

Dikes. Each group of tanks shall be diked. Dikes shall be constructed of earth or masonry. Each dike shall have a capacity of not less than one and one-fourth times the combined capacity of the tanks which it surrounds. Earth dikes shall have a flat section at the top of the dike not less than three feet in width and earth banks shall have a slope of not less than one and one-half inches to the foot on both sides. Earth dikes shall be not less than four feet high on the inside and in no case higher than one-fourth the height of the tank when said tank exceeds sixteen feet. Embankments or dikes shall be continuous with no openings for pipe or roadways. Piping shall be laid well below the foundation of embankments.

Capacity limits. The capacity of any tank containing flammable liquids of class I and class II shall not exceed fifteen thousand gallons. The total capacity of tanks in any storage yard for the storage of class I, II and III flammable liquids shall not exceed five hundred thousand gallons, and the capacity of any storage yard used exclusively for the storage of class IV flammable liquids shall be unlimited, such storage yard including all space within the required dikes. Nothing herein shall be construed as prohibiting in wholesale distributing yards above ground gravity flow self-measuring filling tanks of a capacity not to exceed one thousand gallons; provided, however, that not more than three such measuring tanks shall be used in any such yard. The distance from said filling tanks to other tanks or buildings shall be in accordance with the tables of clearances in section 51-10.

51-53. *Construction materials.* Underground and enclosed tanks for flammable liquids shall be constructed of galvanized steel, or open hearth steel, or of wrought iron of thickness and weight not less than provided in the following table:

	Minimum thickness of materials	
Capacity (gallons)	U. S. standard gauge	Pounds per square foot
1 to 285, incl.	16	2.50
286 to 560, incl.	14	3.125
561 to 1,100, incl.	12	4.375
1,101 to 4,000, incl.	7	7.50
4,001 to 12,000, incl.	1/4 in.	10.00
12,001 to 20,000, incl.	5/16 in.	12.50

All material used in underground and enclosed storage tanks, for which material is lighter than No. 7 U. S. standard gauge shall be galvanized. If internal bracing is provided, tanks for the storing of class III and IV liquids, having a capacity of from twelve thousand and one to thirty thousand gallons, shall be built of steel plate not less than one-fourth inch thick. All joints of tanks shall be riveted and caulked, brazed or welded. Tanks shall be tight and sufficiently strong to bear without injury the most severe strains to which such tanks are subjected. Shells of tanks shall be properly reinforced where connections are made. All connections shall be made through the top of the tank above the liquid level. Tanks and systems under pressure shall be designed for four times the maximum working pressure and such tanks shall be tested at twice the maximum working pressure. All iron or steel tanks shall be coated on the outside with tar or asphaltum or heavy protective paint. All concrete tanks shall be constructed in accordance with the provisions of chapter 74 of this code.

Covering. All flammable liquid tanks buried underground shall have the top of the tank not less than two feet below the surface of the ground, except that in lieu of such covering, tanks may be buried under not less than twelve inches of earth, with a cover of reinforced concrete not less than six inches in thickness provided over such tanks, which shall extend not less than one foot horizontally beyond the projected limits of the tanks in all directions. All concrete work shall be in accordance with chapter 74 of this code. Where tanks are liable to be displaced because of moisture in the ground, all tanks shall be securely anchored or weighted. Where tanks are located under driveways, such tanks shall be not less than three feet below the top surface of the driveway; provided, however, that if such driveways are paved with concrete not less than six inches in thickness, the total coverage above the top of the tank shall be not less than two feet.

Capacity. The total capacity of underground tanks is limited in respect to the lowest floor, basement or part of any adjacent building as given in the following table:

Maximum Capacity of Tanks for Underground Storage

	Class I, II and III under 100° flash point (gallons)	Class III above 100° F. flash point (gallons)
If top of tank is above the lowest floor, basement or part of any building with a clearance of 10 feet or less	550	50,000
More than 10 feet	2,000	75,000
More than 20 feet	5,000	100,000
More than 25 feet	15,000	150,000
More than 30 feet	20,000	200,000
More than 40 feet	50,000	500,000
More than 50 feet	Unlimited	Unlimited

51-54. Tanks for flammable liquids inside of buildings other than structures used exclusively for the purpose of hazardous use units for the handling and storage of flammable liquids, shall be constructed as follows:

120 gallons or less. Tanks for class II and III liquids having a capacity of one hundred twenty gallons or less shall be of steel or tin plate, soldered and tight. Material shall be of not less than No. 20 U. S. standard gauge; provided, however, that where tanks contain more than six gallons of liquid used in connection with and in the same room with oil burning equipment, the provisions of the third paragraph shall apply. Nothing in the building provisions of this code shall be construed as prohibiting the use of original barrels or drums as a source of supply, if such barrels or drums are substantially placed to prevent tipping or rolling. Pumps shall be inserted through a close fitting connection in the side or the head of the container.

Over 120 gallons. Tanks for class II and III liquids having a capacity of more than one hundred twenty gallons shall be of the thickness required by the first paragraph of section 51-53 or shall be constructed of concrete.

Location and foundation. Tanks shall be located below the level of any piping to which they are connected, or else shall be equipped with standard anti-siphoning devices, and shall be set on a substantial foundation. Tanks exceeding twenty-five hundred gallons capacity shall be supported independently of the floor construction.

Storage tanks for fuel oil. Steel tanks containing more than two hundred eighty-five gallons and installed in connection with oil-burning equipment shall be constructed in accordance with the requirements of the first paragraph of section 51-53. Fuel oil tanks located inside of buildings shall be located in the basement or lowest story thereof, and shall not exceed five hundred fifty gallons individual or aggregate capacity if unenclosed. Fuel oil storage tanks having an aggregate capacity of more than five hundred fifty gallons shall be enclosed within walls of not less than four hour fire-resistive construction extending at least one foot above the highest level of the tanks. The ceiling or enclosure above such tanks shall be of not less than four hour fire-resistive construction, unless such tanks are surrounded with sand or earth within the enclosure and up to not less than one foot above the highest level of the tanks. In lieu of any such enclosure, the tanks may be imbedded solidly in reinforced concrete not less than six inches thick at any point. Concrete fuel oil tanks shall have an enclosure as required by this paragraph for steel tanks. Walls of concrete tanks shall be constructed independently of and not in contact with the building walls or inclosing walls. In buildings of ordinary construction the gross capacity of fuel oil storage tanks shall not exceed five thousand gallons. In buildings of semi-fireproof construction the gross capacity of fuel oil storage tanks shall not exceed seventy-five hundred gallons. In buildings of fireproof construction the gross capacity of fuel oil storage tanks shall not exceed ten thousand gallons; provided, however, that any room in a building of fireproof construction, and having a standard fire separation from any other part of the building, may have a gross capacity of fifty thousand gallons, with an individual tank capacity not exceeding twenty-five thousand gallons, if such tanks are also surrounded with sand not less than twelve inches thick at the sides and one foot, six inches thick over the top.

Rooms and Fire Areas

51-55. The requirements of sections 50-21 to 50-25, relating to size and location of rooms in a business unit, shall apply to a hazardous use unit in accordance with the provisions of section 51-1, except as otherwise provided in this part of this chapter dealing with rooms and fire areas.

51-56. There shall be no limitation of fire areas in hazardous use units of fireproof or semi-fireproof construction, except as required by this part of this chapter dealing with rooms and fire areas.

51-57. None of the following herein described hazardous use units:
Asphalt, tar, pitch, resin or paraffin heating room
Corrosive acid storage room
Drying room for any article or material which will give off explosive or flammable vapors during the drying process
Fume or explosion hazard
Grinding or dust producing
Hazardous chemical
Highly flammable material storage
Japanning or enameling room
Nitrocellulose products room
Paint spraying or mixing room
Picker or shredder room
Standard fireproof vault
Sulphur storage room
shall be located in any story below grade in any building hereafter designed, erected, altered or converted for any purpose; provided, however, that one or more rooms built as required by section 51-26 for no purpose other than that of the operation of water purification plants or a refrigerating unit may be located in any basement of any building.

51-58. No asphalt, tar, or resin heating rooms shall have a fire area greater than twelve hundred square feet.

51-59. No dry cleaning room in which a flammable solvent having a flash point below one hundred degrees Fahrenheit (closed cup tester) is used shall have a fire area greater than three hundred square feet. [Amend. Coun. J. 6-5-40, p. 2653.]

51-60. *Fume or explosion hazard buildings.* Every fume or explosion hazard building shall have a fire area limited by the provisions of chapter 62 for manufacturing units.

Fume or explosion hazard rooms. No fume or explosion hazard room shall have a fire area of more than six hundred square feet; provided, however, that this requirement shall not apply to a room used for no purpose other than the operation of a water purification plant or refrigerating unit. Two sides, or two ends, or one side and one end of every fume or explosion hazard room shall be inclosed by an outside wall. Not more than two fume or explosion hazard rooms shall be permitted in any building; provided, however, that in a building equipped throughout with a standard system of automatic sprinklers not more than six such rooms shall be permitted.

Manufactured gas buildings. Any building used exclusively for the production, distribution or storage of manufactured gas as a public utility, shall be exempt from the provisions of this section.

51-61. No hazardous chemical room or storage building shall have a fire area of more than six hundred square feet.

51-62. The capacity of a motion picture trial exhibition room shall not exceed fifty persons, with an allowance of not less than ten square feet of floor area for each seat.

51-63. Any nitrocellulose products room other than a standard fireproof vault shall not exceed the limits of fire area required by section 51-41 for certain types of fire-resistive construction. Every room used for the examination or repair of motion picture films shall be occupied by not more than eight persons at one time, and the floor area shall not exceed four hundred square feet, inclusive of a space of not less than four feet, six inches which shall be allowed between tables for aisles leading to exits.

51-64. No picker or shredder room shall have a fire area of more than one thousand square feet.

Multiple Use Buildings

51-65. The requirements of chapter 50 for business units shall apply to any hazardous use unit for office or storage or manufacturing purposes, except as otherwise provided in this part of this chapter dealing with multiple use buildings; and the most restrictive provisions in respect to multiple use buildings shall govern wherever other occupancy chapters are inconsistent with the requirements of this chapter.

51-66. *Auxiliary office use.* Every hazardous use unit required under sections 51-5 to 51-18, inclusive, to be isolated from every other building or structure shall be located in a building used for no purpose, other than that of the purposes of such a hazardous use unit; provided, however, that any such building may have an auxiliary office designed, intended and used for the regular occupancy of not more than three persons.

Adjoining other occupancies. The following hazardous use units shall be permitted to adjoin a building having the same occupancy, or a building having one or more other occupancies:

Corrosive acid storage buildings
Cereal, feed, flour, grist and starch mills
Dry cleaning building, subject to the provisions of section 51-9
Fume or explosion hazard buildings, subject to the provisions of section 51-13
Highly flammable material storage buildings
Smoke houses

Any such building except a dry cleaning building may have an auxiliary office, designed, intended or used for the regular occupancy of not more than six persons.

Hazardous use units prohibited. A hazardous use unit shall not be permitted in any building used for any other occupancy, except as provided by sections 63-1 to 63-7, inclusive, of this code.

51-67. Every hazardous use unit shall be separated from every other hazardous use unit and from every other occupancy in the same building by construction of the character as required by sections 51-19 to 51-54, inclusive, and as provided by sections 63-1 to 63-7, inclusive, of this code.

51-68. There shall be no opening between a hazardous use unit and any adjoining or adjacent building except in the ground story or first story; provided, however, that adjoining and adjacent hazardous use units of the same class of occupancy which are used by the same person may have communication on any floor, subject to the applicable provisions of sections 50-28 to 50-43, inclusive, of this code.

51-69. Every court used in part for the purposes of a hazardous use unit and in part for any other purpose shall meet the most restrictive requirements in the building provisions of this code for a court for any of the purposes for which the building is designed, erected, altered or used.

Means of Exit

51-70. The requirements of sections 50-28 to 50-43, inclusive, relating to means of exit for business units, shall apply to any hazardous use unit, except as otherwise provided in this part of this chapter dealing with means of exit.

51-71. In no case shall any path of exit travel from any point in any building to a way of departure outside of the building, pass directly in front of or immediately over any window, or other wall ventilating opening, or any skylight or any opening in any vent flue for any hazardous use unit which is less than twenty-four feet distant therefrom; provided, however, that it shall be permissible for any means of exit to pass directly in front of or directly over any type A window or non-combustible door in any such hazardous use unit.

51-72. No point on any floor of any building which is a hazardous use unit, and no point on the floor of any room or other space which is a hazardous use unit located in any multiple use building, shall be more than seventy-five feet from the center of an outside exit doorway, or from a doorway to a vertical means of exit, measured along the line of exit travel; provided, however, that such maximum distance of travel to an exit shall be less where so required by this part of this chapter dealing with means of exit.

51-73. Every room or space in a hazardous use unit shall have one or more exit doorways or other means of exit, according to floor area or size as follows:

One exit required. Any room or space, except as otherwise provided, having a floor area of three hundred square feet or less, or a maximum side or diameter of twenty feet or less, except an office or motion picture trial exhibition room, shall have one such exit not less than three feet wide. Any office or motion picture trial exhibition room having a floor area of six hundred square feet or less, shall have one such exit doorway not less than five feet wide; provided, however, that if such room is three hundred square feet or less in area, such exit doorway may be three feet wide.

Two exits required. Every film examining or repairing room of any size, and any room or space having a floor area of more than three hundred square feet, or a maximum side or diameter of more than twenty feet, and any office or motion picture trial exhibition room having a floor area of more than six hundred square feet, shall have not less than two such exits, separated by a distance not less than the least dimension of any side of the room.

Exits from fire area. Every fire area containing any such room shall have not less than two exits from the story containing such room, and from every higher story, which shall be separated by a distance of not less than twenty-five per cent of the perimeter of the story within the fire area.

51-74. Any vertical means of exit serving another occupancy shall not be combined for common use with a means of exit serving any hazardous use unit.

51-75. Every room in a dry cleaning building in which a flammable solvent having a flash point below one hundred forty degrees Fahrenheit (closed cup tester) is used shall be provided with an exit directly to the outside of the building. Every door to such a room shall open outward. Any stairway for such a building shall be a fire shield or exterior stairway. There shall be no window or ventilating opening within five feet of any such stairway. An open balcony or runway leading to a stairway shall be considered as such means of exit, but there shall be no window or ventilating opening upon or below such balcony. [Amend. Coun. J. 6-5-40, p. 2653.]

51-76. Every room used for the examining or repairing of motion picture films shall have not less than two exit doorways, located as required by section 51-73, and one of such exits shall lead directly to a vertical means of exit or to the outside of the building. Any such room shall not have any exit into or through another nitrocellulose products room, excepting a receiving, shipping or distributing room having such products in closed containers.

51-77. Every exit doorway from any motion picture trial exhibition room shall have a door or doors arranged to open only in the direction of exit and one such doorway shall open into a horizontal exit connection or a vertical means of exit, or directly to the outside of the building.

Windows and Ventilation

51-78. The requirements of sections 50-44 to 50-46, inclusive, relating to windows and ventilation in a business unit, and the requirements of chapter 81 of this code, shall apply to a hazardous use unit, except as otherwise provided under this part of this chapter dealing with windows and ventilation.

51-79. Every standard fireproof cabinet shall be ventilated directly to the outer air by a metal duct having a cross-sectional area of not less than thirty-six square inches. The metal in the ventilating duct shall be galvanized and not less than No. 18 U. S. standard gauge in thickness, with all joints riveted or welded. Such duct shall be covered with heat insulating material not less than one inch in thickness, which shall be protected on the outside by a continuous covering of sheet metal not less than No. 26 U. S. gauge in thickness. All such ventilating ducts shall be not less than nine inches from any combustible material and shall terminate in the open air with a clearance from other openings as required by section 51-80 for standard fireproof vaults. Each compartment shall be provided with a separate and independent vent duct.

51-80. Every standard fireproof vault shall have a vent flue or window opening directly to the outer air. Such vent flue termination or window shall be located not less than ten feet measured vertically or five feet measured horizontally from any forty-five minute fire-resistive door or type A window, or not less than twenty feet measured vertically, or ten feet measured horizontally, from any unprotected opening. Such window or vent flue shall have a net open area of not less than one square inch for each one cubic foot or fraction thereof of space in the standard fireproof vault. Nothing in this chapter shall be construed as prohibiting on each floor, vent shaft connections from standard fireproof vaults into one vent shaft; provided, however, that not more than four such vaults on any one floor shall be connected to one such vent shaft. The area of the combined vent shaft shall be of such area as is required to vent the largest of the standard vaults for which said vent shaft provides ventilation. All vent flues or portions of vent flues shall have no inclination from the horizontal of less than forty-five degrees. Nothing herein shall be construed as preventing more than one window or vent flue or combination of windows or vent flues to provide the necessary ventilating area. Any such vent flue shall be used for no other purpose than to provide ventilation from standard fireproof vaults. Such vent flue shall be constructed of brick, tile or concrete walls not less than four inches in thickness, and no combustible material shall be used in the construction or support of flues. Any vent flue opening in a standard fireproof vault shall be in the ceiling or as close as practicable to the ceiling. The unobstructed opening into the atmosphere shall be not less in area than the area of the vent flues. Every vent flue furnishing the required ventilation shall be equipped with not less than a sixty minute fire-resistive door which shall be held normally closed, and such fire door shall have as its actuating mechanism a thermostatic releasing device to open the door. Such a door in the vent flue shall be so arranged that when the door is opened, the entire required area of the vent flue shall be available for ventilation purpose. All required windows shall be so provided with thermostatic releasing devices that a fire or an explosion in the vault shall cause such windows to open for the entire required ventilation area.

51-81. Every dry cleaning room shall have means of natural ventilation as required under section 51-86 for material heating rooms; provided, however, that the combined area of ventilating openings which shall have closures arranged to open automatically in case of explosion or fire shall be not less than twenty per cent of the floor area of the room. In addition to the natural ventilation required by this section, there shall be a mechanical ventilating system which shall exhaust air from the room as provided by chapter 81 of this code.

51-82. *Rooms.* All rooms in which class I or II flammable liquids are used in open vats, pans or other vessels, or in which any flammable liquids are heated or otherwise treated in such a manner as to produce flammable vapor, shall be ventilated as hereinafter provided. There shall be a vent opening in the wall at the floor line near each open receptacle and each heating device containing such liquid. Such vent openings shall have a net cross-sectional area of not less than thirty-two square inches and shall be protected with one-half inch mesh No. 16 wire. When such vent openings are not located in the outside wall of the building or room, there shall be a non-combustible vent flue built into the wall or floor or securely fastened thereto and so arranged as not to be subject to mechanical injury. Such vent flue shall conduct to and pass through an exhaust fan, which shall run continuously while the room is in use, and which shall be of sufficient capacity to change the air in the room completely in not more than five minutes. All discharge outlets of such vent flues shall be provided with non-corrodible wire screen and shall be so located that they are not nearer than ten feet vertically or five feet horizontally from any door or window opening.

Storage tanks. Each above ground storage tank for flammable liquids, having a capacity of more than one hundred gallons, shall have in addition to safety valves required elsewhere, a vent opening provided with non-corrodible wire screen not less than thirty mesh per inch. The screens on such openings shall be so arranged that they can be removed but such screens shall be kept normally firmly attached to the frames of openings. The covers for manholes, handholes and gauge holes shall be made tight fitting. Every tank containing flammable liquids at atmospheric pressure, shall be provided with an open galvanized vent pipe, which shall be arranged for proper draining, or equipped with an automatically operated vent. The lower end of the vent pipe shall extend through the top of the tank not more than one inch. Vent openings shall be of sufficient area to permit the escape of air or vapors during filling operations, and such openings or pipe shall be not less than one inch in diameter. Such vent pipe shall terminate in a "goose-neck" or weather proof hood, and the opening shall be screened with a non-corrodible wire screen of thirty mesh per inch, accessible for examination and removal. The termination of such vent pipe shall be outside of any building. The outer end of opening of a vent pipe shall be above the top of the fill pipe and not less than three feet measured horizontally or vertically from any window or door opening or any other opening of a building; provided, however, that for Class I and Class II liquids, and for Class III liquids in tanks containing heaters, the opening of vent pipe shall be not less than twelve feet above the top of the fill pipe. Nothing herein shall be construed as prohibiting vent pipes leading into a common header where a battery of tanks contain the same class of liquid. In such case, individual vent pipes shall be provided with screens between tank and header, and the connection to the header shall be not less than one foot above the level of the top of the highest reservoir from which the tanks are filled. [Amend. Coun. J. 11-6-40, p. 3432.]

51-83. Every fume or explosion hazard room shall have means of natural ventilation as required under section 51-86 for material heating rooms, except that the combined area of ventilating openings with closures arranged to open automatically in case of explosion or fire shall be not less than twenty per cent of the floor area.

51-84. Every hazardous chemical room, and every grinding or dust producing room, shall have means of natural ventilation or vent flues as required by section 51-86 for material heating rooms; provided, however, that the combined area of ventilating openings which shall have closures arranged to open automatically in case of explosion or fire shall be not less than ten per cent of the floor area of the room, and the combined area of vent flues, in lieu of ventilating openings shall be not less than eight per cent of the floor area.

51-85. Japanning or enameling rooms, and paint mixing or spraying rooms shall have ventilation as required for such spaces by chapter 81 of this code.

51-86. Every asphalt, tar, pitch, resin or paraffin heating room, every highly flammable material storage room and every picker or shredder room shall be provided with one or more windows, skylights or other ventilating openings facing a public way, private alley, yard or other open space not less than fifteen feet wide, with closures arranged to open for natural ventilation and having a combined area of not less than five per cent of the floor area of the room. Not less than fifty per cent of the required combined area of openings which are arranged to open for ventilation shall be provided with sashes or dampers, or other closures, which shall be hung, overbalanced and held in place in such manner that an explosion or fire within the room will cause such sash, damper or closure to open for its full area; provided, however, that in lieu of such requirements it shall be permissible to provide a vent flue or flues extending directly to the outside air, which shall be used solely for the purposes of ventilating such room, which shall have a combined area of not less than four per cent of the floor area of the room, with an inclosure of the same fire-resistive value as is required for the inclosures of the room, and equipped with a normally closed non-combustible trap door arranged to open automatically in case of explosion or fire within the room. No such window, skylight, ventilating opening or vent flue required by this section shall be nearer than four feet, six inches to any other building or structure on the same premises or to any property dividing lot line.

51-87. Every motion picture trial exhibition room shall have ventilation as required by chapter 81 of this code for motion picture studios.

51-88. Every nitrocellulose products room shall have means of natural or mechanical ventilation as required by section 51-84 for hazardous chemical rooms.

51-89. Every room for the drying of articles or materials which will give off explosive or flammable vapors during the drying process shall have means of natural ventilation the same as required under section 51-86 for a material heating room, except that where there is a mechanical means of collecting and disposing of all such vapors produced in the drying room, the provisions of this section shall not apply.

Equipment

51-90. The requirements of sections 50-47 to 50-49, inclusive, relating to equipment in a business unit shall apply to a hazardous use unit, except as otherwise provided under this part of this chapter dealing with equipment.

51-91. Every conveyor or duct between any hazardous use unit and any other building, or any other room in the same building, shall have an automatic closing non-combustible damper at each opening through any required fire separation, except as otherwise permitted under section 51-45. Every such damper for a conveyor shall meet the requirements of section 51-129.

51-92. All moving equipment, metal floors and railings, pumps, motors and machinery, in a hazardous use unit used for highly flammable or explosive hazard materials shall be permanently and safely grounded to guard against static electricity sparks.

51-93. *Explosion-proof motors.* When electric motors are required in any room or hazardous use unit containing explosive or flammable vapors or atmosphere, or dust or gas, such motors shall be of types approved, for use in hazardous locations, as required by the electrical regulations of this code.

Other motors. Any electrical motor, other than an explosion-proof motor, shall be located in a separate building, or separated by a standard fire separation from any room or hazardous use unit containing explosive or flammable vapors or atmosphere, or dust or gas.

Switches and control devices. Every electric switch or other control device in any room required by the first paragraph to have explosion-proof motors, shall be of a type approved for use in the presence of explosive or flammable vapors or atmosphere, or dust or gas.

51-94. No open flame or fire, no torch or other open light, no forge, stove, furnace, oven, boiler or similar device in which heat is generated or used and no electrical or similar device producing an exposed spark shall be permitted in any hazardous use building or room, except as otherwise permitted under this part of this chapter dealing with equipment.

51-95. Nothing in the provisions of this chapter shall be construed as preventing the carrying of any piping containing any substance having a temperature of two hundred twelve degrees Fahrenheit or less through any special room or hazardous use unit; provided, however, that such piping shall be installed with tight fitting sleeves to prevent the passage of any gas or vapor around such pipe through any enclosing walls, floors or ceilings.

51-96. Standard directional signs shall be provided for any hazardous use unit three stories or more in height as required by chapter 66 of this code.

51-97. Heating in rooms and buildings used for the storage and handling of flammable liquids of classes I, II and III, having a flash point of less than one hundred degrees Fahrenheit, shall be by steam and hot water only. Standard fire division walls shall surround all boiler rooms, furnace rooms and other rooms containing exposed fire, electric dynamos, motors, switches or other spark producing devices.

51-98. Every dip tank or vat for use with a volatile flammable liquid or with a liquid containing any volatile flammable substance in solution or suspension, shall be provided with a close fitting top. If the use of the tank or vat requires that it be kept open, the top shall be arranged to close automatically in case of fire, except as otherwise provided in section 51-127. Every such dip tank or vat shall be provided with a drain pipe whereby its contents may be drawn off to the required liquid storage tank when such tank or vat is not in use.

51-99. *No connections to drains.* There shall be no floor drains or other connections to the city sewer system from a tank or any room or compartment in which flammable liquids are stored or used.

Valves in drawing-off pipes. All drawing-off pipes terminating inside of any building, shall have valves at the discharge end, and when delivery is by gravity such pipes shall have an automatically closing type shut-off valve and an emergency valve.

Valves for above ground tanks. All above ground tanks shall have a valve in the pipe leading from such tank which shall be located not more than ten feet from the tank. Where there are two or more tanks cross-connected to a common header there shall be a valve in each cross-connection.

Pumps. Pumps delivering to or taking supply from an above ground storage tank shall be provided with valves on both suction and discharge side of pump.

Pipe drain to tanks. Where underground tanks are used, all pipe carrying flammable liquid shall pitch toward the tanks without traps or pockets and such pipes shall enter the tanks at the top.

Requirements for pipe. Where the working pressure is less than one hundred pounds, all pipe used in systems for transferring flammable liquids shall be of the standard full weight, wrought iron, steel or brass type. Where the working pressure is in excess of one hundred pounds per square inch, extra heavy pipe and fittings shall be used. No pipe less than one-half inch internal diameter shall be used. Outside pipe shall be rigidly supported.

Pipes in rooms containing open flames. Pipes carrying class I or II flammable liquids, unless such pipes are without threaded joints or connections, shall not extend into or pass through any rooms which contain open light or fire.

51-100. *For pumps.* In systems using pumps to supply flammable liquids to internal combustion engines, fuel oil burners or other devices, a pressure relief valve shall be installed in the supply line to such devices. Pressure relief valves shall be so arranged as to return surplus oil to the supply tank.

Emergency relief for excessive internal pressure. No form of emergency relief construction shall be required for vertical tanks which have conical roofs with a slope of less than two and one-half inches in twelve inches and where the strength of the joint between the roof and the shell is no greater than that of the weakest vertical joint in the shell. Every other above ground tank used for the storage of flammable liquids shall have emergency relief construction. In tanks where entire dependence for relief is placed upon some form of emergency relief construction other than a weak seam, such emergency relief construction or safety valve shall be adequate to relieve the excessive pressure due to external heat. The net cross-sectional area of such additional safety vent shall be not less than twenty-four square inches for any tank of twenty-one thousand gallons capacity or less and not less than seventy-eight square inches for any tank of more than twenty-one thousand gallons capacity.

51-101. *Filling pipe.* The end of the fill pipe for underground storage tanks for class I or II flammable liquids shall be carried to a location outside of all buildings and shall be more than five feet from any door or window opening.

The fill pipe shall be closed by a screw cap or fill cap which shall be kept locked except during the filling operation.

Standard filling hose. All hose used for the transferring of flammable liquids shall be of the metal lined type, or of the type embodying wire wound within the fabric of the hose, and thoroughly bonded to the coupling connection at each end of hose.

Deliveries to tanks. Deliveries of flammable liquids of class I and class II shall be made directly to the storage tank through the fill pipe by means of a hose or pipe connected to the fill pipe in the barrel, container, tank, wagon or tank car from which such liquid is being drawn.

Pumps required. Flammable liquids shall be drawn from tanks by pumps or other systems, which shall be equipped with controlling apparatus and pipe shall be so arranged as to control the quantity of discharge and to prevent leakage or discharge inside of the building by any derangement of the system. When located inside a building, the pump or other drawing off device shall be located on or above the ground floor in a well ventilated place.

Gravity feed prohibited. No tanks, drums or other containers, holding flammable liquids within a building or discharging within a building, shall be provided with any faucet or other bottom drawing device. Pipes shall not terminate at any point lower than the level of the source of supply. Nothing in this chapter shall be construed as prohibiting the storage or gravity flow or both storage and gravity flow of flammable liquids when such liquids are used in connection with oil burning equipment, or in refineries or in manufacturing and jobbing plants and in stores, plants and establishments; provided, however, that tanks holding class I or II flammable liquids shall be in a room constructed and arranged as provided by section 51-51 for a special room for flammable liquids.

51-102. *Kettles, vats, vessels.* Kettles, vats, saturators and other vessels used in manufacturing processes and which have a capacity of more than five gallons of flammable liquids shall not be located within five feet of combustible material, nor within five feet of any exit. All combustible floors within ten feet of such containers shall be protected with a non-combustible covering. All kettles and other open containers shall be provided with substantial covers arranged to close automatically by heat actuated devices, or shall be provided with equipment to flood such tank with standard foam solution fire extinguisher, or a standard dry powder fire extinguisher, or an approved carbon dioxide extinguisher as defined in chapter 90 of this code.

Storage in containers. The storage of flammable liquids within buildings shall be as given in this paragraph; provided, however, that in a special room for flammable liquids, unlimited quantities of class II or III flammable liquids may be stored therein.

(1) *In frame buildings.* Class I or II liquids, in sealed containers or safety cans of not more than one gallon capacity, not exceeding a total of five gallons. Class III liquids, maximum limit of any tank or container, sixty gallons, except as otherwise permitted in sections 51-52 to 51-54, inclusive.

(2) *In other buildings.* Class I liquids, in sealed containers or safety cans not more than one gallon capacity not exceeding a total of ten gallons. Class II liquids in sealed containers or safety cans of not more than five gallons capacity or in barrels, drums or tanks not more than sixty gallons capacity. Class III liquids in sealed containers of not more than five gallons capacity, in barrels, drums and tanks not exceeding one hundred twenty gallons capacity except as otherwise permitted in sections 51-52 to 51-54, inclusive.

(3) *Paint and lettering.* Portable containers of a capacity of ten gallons or less, used for storing class I or II flammable liquids, shall be painted red, or shall be painted with a conspicuous band or stripe of red. Such containers shall be conspicuously lettered in black with the following words: "DANGEROUS—KEEP LIGHTS AND FIRES AWAY." Portable containers, used for storing class III flammable liquids shall be painted blue, or shall be painted with a conspicuous band or stripe of blue. Such con-

tainers shall be conspicuously lettered in white with the following words: "DANGEROUS—KEEP LIGHT AND FIRE AWAY."

Storage cabinets. Where the total quantity of flammable liquids stored is more than ten gallons, and less than fifty gallons, and no individual container exceeds five gallons capacity, storage cabinets constructed as follows shall be required: Bottom, top and sides of cabinet shall be made of sheet iron, not less than No. 18 gauge in thickness. Said cabinet shall be double walled, with not less than one and one-half inches air space. Joints shall be riveted or welded. Doors shall be of a construction equivalent to walls and shall be provided with a 3-point lock. Door sill shall be raised not less than two inches above the bottom of the cabinet. The cabinet shall be conspicuously labeled in red letters "FLAMMABLE—KEEP FIRE AWAY."

51-103. Nothing in the building provisions of this code shall be construed as prohibiting the use of flammable liquid reclaimers or recovery systems, the capacity of which is less than ten gallons per hour and which equipment shall not heat the liquid above five hundred degrees Fahrenheit, and which shall have no open flame. Such devices shall be arranged so that all gasoline and kerosene and similar vapors which are removed from the oil, shall be condensed and collected in a closed vapor tight container.

51-104. All gasoline gauging or vending devices shall be of substantial construction and firmly secured to concrete or masonry foundations, which shall be so located and designed as to prevent motor vehicles damaging such devices. Systems wherein continuous pressure is maintained on the gasoline storage tank in connection with gauging or vending devices shall not be permitted. The use of above ground gasoline storage tanks, or tank cars or tank trucks, in connection with gasoline vending or gauging devices, shall not be permitted. Devices which discharge by gravity shall be so designed that it shall be impossible to retain in the gauging compartment more than ten gallons of liquid. Such devices shall be so arranged that it shall not be possible to lock the device without draining the gauging compartment.

51-105. Every boiler in a dry cleaning building in which a flammable solvent having a flash point below one hundred forty degrees Fahrenheit (closed cup tester) is used shall be located in a separate building, or shall be separated by a standard fire division wall from every dry cleaning room. The boiler shall be so situated that the line of travel for gases between it and the nearest opening into any dry cleaning room shall be not less than twenty feet. In every dry cleaning building all heating shall be by steam or hot water pipes, equipped with guards as provided under section 51-106 for a standard drying room. [Amend. Coun. J. 6-5-40, p. 2653.]

51-106. All steam or hot water pipes in every standard drying room, and in every drying room for any article or material which will give off explosive or flammable vapors during the drying process, shall be carried on non-combustible supports and shall be provided with non-combustible guards so arranged as to maintain a clear space of not less than six inches between such pipes and any article or material which is being dried. Where textiles, clothing or similar articles are dried, such guards shall have openings not more than one-half inch in width. Any wire or sheet metal used in such guards shall be not less than one-eighth inch thick, and where the articles or materials being dried are heavy or are handled in carts, trucks or other conveyors, the required guards shall be of sufficient strength to withstand such impacts and pressure as may be imposed upon them. No steam or hot water pipes shall be located less than six inches from the floor at any point. Provisions shall be made for the cleaning of all lint, dust, waste and refuse from around steam and hot water pipes.

Any opening for the admission of hot air to a drying room shall be protected by a metal screen or grille with openings not more than one-half inch in width. The metal of any such screen or grille shall be not less than one-eighth inch thick. No such opening for the admission of hot air shall be nearer than six inches to the floor at any point.

Any stove in a drying room shall be provided with a standard furnace foundation. Any stove or electric heating device in a drying room shall be provided with a metal guard so arranged as to maintain a clear space of at least six inches between said stove or electric heating device and any material or article which is being dried, which shall conform in all respects to the requirements of this section for guards around steam or hot water pipes.

51-107. Every conveyor, duct and spout between a grain bleacher and any grain elevator or other building shall be enclosed in a casing constructed of non-combustible material. Conveyors, ducts and spouts shall have an automatic closing fire damper at each end, having a fire-resistive value of not less than forty-five minutes. Every sulphur burning furnace for a grain bleacher shall be so located that the length of the sulphur fumes pipe will not be less than twenty-five feet, and every such furnace shall be separated by a distance of not less than twenty-five feet from any grain elevator, and from any other building except a grain bleacher.

51-108. Every grinding or dust producing room shall have mechanical means of collecting and disposing of the lint, dust, shavings or other fine particles of matter produced therein, and the heating of such rooms shall be by steam or hot water pipes, equipped with guards as provided under section 51-106 for a drying room. Every such means of collecting dust shall be provided with a dust arrester, collector or precipitator, which will prevent the exhausting of particles of matter heavier than air into the atmosphere.

51-109. *Foundations.* Every oven, for the baking of japan or enamel work, located on a combustible floor, shall be provided with a standard furnace foundation, meeting the requirements of section 80-8.

Separation of baking compartment and fire chamber. If direct heat is used, the baking compartment of the oven shall be cut off from the fire chamber and smoke flue by a tight non-combustible partition, and provision shall be made to keep the flame at such distance from such partition as will preclude the possibility of igniting the fumes in the baking compartment.

Metal oven construction. The walls and ceiling of every metal oven shall consist of an inner and outer shell of metal not less than three-eightieths inch thick, with riveted or welded seams and joints, secured to a rigid framework of suitable iron or steel shapes. The inner and outer metal shells shall be separated not less than one and one-half inches, the space between being filled solid with fused non-combustible insulating material not less than one and one-fourth inches thick.

Brick oven construction. Every brick oven shall have walls and ceiling at least four inches in thickness and shall be provided with a metal door not less than five sixty-fourths inch in thickness.

Oven ventilation and relief covers. Every japanning or enameling oven shall have a vent pipe of iron or steel, not less than one thirty-second inch thick with riveted or welded seams and joints, or formed of a compressed mixture of asbestos fiber and Portland cement or as provided by chapter 76 of this code for smoke flues and chimneys.

Clearances. No part of any oven inclosure or oven flues shall be located nearer to any combustible construction than is permitted under chapter 61 of this code for low pressure boiler breachings.

51-110. Only steam or hot water shall be used for heating a kiln or room for the drying of lumber.

51-111. A nitrocellulose products room shall be heated by hot water or steam, by either direct or indirect means. Any steam radiator or steam pipe, in which the working pressure exceeds five pounds per square inch, shall be located not less than four feet from the floor. Every steam or hot water radiator or pipe which is less than four feet from the floor, or which is so located that any nitrocellulose material or waste might come in contact with it, shall be protected by a guard of No. 18 U. S. gauge galvanized wire screen of one-fourth inch mesh. Such guard shall be not less than three inches from the radiator or pipe at all points, and the tops, if any, shall slope at an angle of not less than forty-five degrees from the horizontal so as to prevent the use of the tops as shelves. No floor register shall be used with any indirect system of heating, and no wall register shall have an opening nearer than six inches from the floor. Every furnace or other equipment for the heating of air in an indirect system shall be located in an independent room separated from every nitrocellulose products room by not less than two hour fire-resistive construction.

51-112. In every paint mixing or spraying room and every picker or shredder room, all heating shall be by steam or hot water radiation equipped with guards as provided under section 51-106 for a standard drying room.

51-113. In every motion picture trial exhibition room, seats provided for spectators shall be fixed seats.

51-114. Every rack, hanger, trolley, rail, groove or other piece of equipment in any smoke house or smoke room shall be of non-combusible material.

Danger Signs

51-115. Every fume or explosion hazard building and every fume or explosion hazard room shall have the words "DANGER — POISONOUS GAS" where any fume hazard gas occurs, or the words "DANGER — EXPLOSIVE GAS" where any explosion hazard gas occurs, painted in a conspicuous position on the outside of every entrance thereto; provided, however, that no such sign shall be required for any building or room in which not more than two standard cylinders of any such gas are present at any time. Every such sign shall meet the requirements of section 51-117 for lettering.

51-116. Every building or room or above ground tank for the use or storage of flammable liquids, and every building or room for highly flammable materials, shall have the words "FLAMMABLE — KEEP FIRE AWAY" painted in a conspicuous position on the outside thereof, with letters as required by section 51-117.

51-117. Every hazardous chemical room and every hazardous chemical storage building shall have the words "HAZARDOUS CHEMICALS — USE NO WATER" painted in a conspicuous position on the outside of every entrance door thereto. Such wording shall be in plainly legible bright red letters on a white background with letters not less than six inches high and with the principal strokes thereof not less than three-fourths inch in width.

51-118. All exterior walls of every magazine shall be painted bright red. The words "MAGAZINE — DANGER" shall be painted in a conspicuous position on the front wall of every magazine.

51-119. Every valve required for the control of the discharge of steam through a steam fire line into any dry cleaning room and every valve required for the control of the discharge of steam through a steam jet in a picker or shredder room, shall be marked with a metal sign which shall bear the words "STEAM FIRE LINE". Every such sign shall meet the requirements of section 51-117 for lettering.

Fire Protection

51-120. The requirements of sections 50-50 and 50-51, relating to the fire protection of a business unit, shall apply to a hazardous use unit, except as otherwise provided under this part of this chapter dealing with fire protection.

51-121. *General.* A standard system of automatic sprinklers, meeting the requirements of chapter 91 of this code, shall be installed in every building or part of a building, hereafter designed, erected, altered, or converted for the purposes of the following occupancies:

Asphalt, tar, pitch, resin and paraffin heating rooms
Drying rooms for articles or materials which give off explosive or flammable vapors during the drying process whether or not a collection and disposal system is provided for such vapors
Fume or explosion hazard buildings of heavy timber or ordinary construction
Grinding or dust producing rooms
Highly flammable material storage buildings and rooms
Japanning or enameling rooms
Nitrocellulose products building and rooms

Paint mixing or spraying rooms
Picker or shredder rooms
Rooms for storage or baling of waste paper
Industrial properties with occupancies such as:
  Artificial flowers
  Artificial leather
  Carpet linings
  Cotton clothing
  Cotton batting
  Cotton rag sorting
  Cotton waste
  Feather renovating
  Shoddy mills
  Straw goods
  Woodworking with dipping or varnishing

and such other occupancies as shall be determined to be in fact of high hazard by the commissioner of buildings, in accordance with the true meaning and intent of this section and consistent with the occupancies definitely fixed as hazardous use units; provided, however, that if the non-hazardous areas of any building in which such an occupancy occurs, are separated from the hazardous use area by a standard fire separation, it shall be permissible to omit such sprinkler system from the non-hazardous areas; and provided further, that where required under other paragraphs of this section, every fire area above the lowest fire area in which certain hazardous use units occur, shall be equipped throughout with a standard system of automatic sprinklers; and provided also, that no sprinkler system shall be required in any vault used for the storage of files, records and other non-hazardous documents.

Where prohibited. No sprinkler system shall be permitted in any hazardous chemical room or in any hazardous chemical storage building, where the presence of water would add to the hazard.

Fume or explosion hazard. No sprinkler system shall be required for any fume or explosion hazard building of fireproof or semi-fireproof construction, nor for any room intended for the storage and use of chlorine gas for no purpose other than the operation of a water purification plant or refrigerating unit, nor for any unit of non-combustible construction used exclusively for the production of manufactured gas.

Highly flammable material storage. Every fire area containing any highly flammable material storage room shall be equipped throughout the story containing such room and throughout every higher story with a standard system of automatic sprinklers; provided, however, that if such room is designed, erected, altered or converted for the purposes of storing in baled condition only, not more than five thousand pounds of any highly flammable material as described under section 51-2, then such a sprinkler system shall be required in such room only.

Nitrocellulose Products Rooms.

(1) *General.* Every fire area containing a nitrocellulose products room shall be equipped throughout the story containing such room and throughout every higher story, with a standard system of automatic sprinklers.

(2) *Drying boxes.* Every box for the drying of nitrocellulose products shall be provided with one automatic sprinkler head for each sixty cubic feet of volume.

(3) *Film examining and repair rooms.* Every room intended for the examination or repair of motion picture films shall be provided with not less than one automatic sprinkler head for each twenty-five square feet of ceiling area, so spaced that the distance between adjacent heads shall not exceed five feet, six inches. Where the distance between heads is less than four feet, ten inches, baffle plates of sheet metal not less than one-fortieth inch

thick shall be provided midway between adjacent heads and shall extend six inches below the level of the deflectors on the heads. Where nitrocellulose products are stored on shelves, there shall be one sprinkler head directly over the aisle in front of each section of shelving. Baffle plates shall be provided between such heads in the same manner as required for other heads in the room.

(4) *Receiving, shipping, and distributing rooms.* Every receiving, shipping or distributing room for nitrocellulose products shall be provided with not less than one automatic sprinkler head for each fifty square feet of ceiling area, so spaced that the distance between adjacent heads shall not exceed seven feet, six inches.

51-122. A standard system of standpipes meeting the provisions of chapter 92 of this code shall be installed in every hazardous use unit which is more than eighty feet in height; provided, however, that such a standpipe system shall be installed in every cereal, feed, flour, grist or starch mill, grain elevator, malt house or similar building which is more than two stories in height.

51-123. *Types.* Standard fire-extinguishers, as defined in section 90-20 shall be of the types suited to types of fire hazard in accordance with the following provisions:

(1) Only dry powder extinguishers shall be installed where grain bleaching processes employing sodium peroxide and sulphur are carried on, wherever calcium carbide is present and wherever the introduction of water would create an added hazard.

(2) Only foam type, carbon tetrachloride or carbon dioxide extinguishers shall be installed in dry cleaning rooms and spaces where flammable liquids are present.

(3) Extinguishers containing a soda-acid or other aqueous solution may be installed elsewhere; except that in hazardous chemical rooms the nature of the chemical contents of such rooms shall determine the extingushing solution.

(4) Only carbon dioxide or other non-conducting agent shall be used in extinguishers installed for use upon fires in electrical equipment.

Requirements. Standard fire-extinguishers shall be installed in every room or space classified as a hazardous use unit as follows:

One standard fire-extinguisher in each room or space of two thousand square feet or less of floor area and one additional standard fire extinguisher for each additional two thousand square feet of floor area or fraction thereof; provided, however, that the distance from any point to the nearest extinguisher shall in no case exceed fifty feet.

51-124. Every fireproof metal cabinet and every compartment therein shall be equipped with one standard automatic sprinkler head. The pressure on the water supply to the sprinkler head shall be not less than ten pounds per square inch.

51-125. Every standard fireproof vault shall be equipped with a standard system of automatic sprinklers, with one standard automatic sprinkler head for each seventy-five cubic feet or fraction thereof of space in such vault. No. 24 U. S. gauge galvanized iron baffle plates reinforced with rolled bottom edge shall be attached to and suspended from the ceiling of the vaults, which shall be so arranged that they shall be midway between adjacent heads and shall extend six inches below the level of the deflectors on the heads.

51-126. In any plant for the manufacture of acetylene gas, provisions shall be made for the disposal of the residuum of calcium carbide outside the building and without discharging into any drain or sewer.

51-127. If a standard foam-type automatic fire extinguisher is placed immediately over or adjacent to a dip tank or vat used with any flammable liquid, and such extinguisher is so arranged that a fire shall automatically cause the foam to flow into the vat or tank, the cover required by section 51-98 for such a tank or vat, may be omitted.

51-128. *Steam fire lines.* Every dry cleaning building in which a flammable solvent having a flash point below one hundred forty degrees Fahrenheit (closed cup tester) is used shall be provided with a high pressure steam boiler having a capacity of one horse power for each one hundred cubic feet contained in the largest dry cleaning room in the building. Such boiler shall be arranged and equipped to permit a steam pressure of not less than thirty pounds per square inch being maintained at all times during which dry cleaning operations are carried on in the building. Each dry cleaning room in the building shall be connected to such boiler by a steam pipe of not less than one and one-half inch diameter, either by a direct line to each room, or by a main or mains with branches. Where any such main or branch line passes through a wall it shall be equipped with a tight fitting journal solidly built into the wall construction. Discharge pipes shall be provided near the ceiling in each drying room, at intervals of not more than ten feet over the entire ceiling area, and in addition there shall be provided one discharge pipe near the ceiling over each washer and each extractor located or provided for in the room. Each such discharge pipe shall be at least two inches long and shall be directed downward. The discharge of steam into each drying room shall be controlled by a valve located outside the building.

Water tanks. There shall be an open tank not less than four feet long, two feet wide, and three feet deep near the entrance to every dry cleaning room, which shall be so arranged and equipped that it may be kept filled with water to within four inches of its top at all times. [Amend. Coun. J. 6-5-40, p. 2653.]

51-129. Every conveyor and spout between a grain bleacher and any other building shall be provided with a damper at each end. Such dampers shall be of construction having a sixty minute fire-resistive value, and shall be so arranged and equipped as to close automatically in case of fire by the release of a fusible link, or by the actuation of a standard thermostatic releasing device.

51-130. Where a supply of steam at not less than five pounds pressure is available, a steam jet shall be installed in every picker or shredder room with a control valve outside of the room. Where such a supply of steam is not available, a standard two and one-half gallon fire extinguisher shall be kept outside the entrance door to every such room and adjacent thereto, with an opening twelve inches square provided through the inclosure of the room, through which the nozzle of the extinguisher may be directed into the room. Such opening shall be provided with a non-combustible cover, removable from the outside.

Artificial Lighting and Exit Signs

51-131. The requirements of sections 50-53 to 50-55, inclusive, relating to artificial lighting and exit signs in a business unit shall apply to a hazardous use unit except as otherwise provided in this part of this chapter dealing with artificial lighting and exit signs.

51-132. All artificial lighting in the following occupancies:
Cereal, feed, flour, grist or starch mill
Dry cleaning building
Fume or explosion hazard room
Grain elevator, malt house or similar building
Grinding or dust producing room
Highly flammable material storage building or room
Japanning or enameling room
Magazine
Nitrocellulose or nitrocellulose products building or room
Paint mixing or spraying room
Picker or shredder room
Drying room for any article or material which will give off explosive or flammable vapors during the drying process

shall be by electric lights protected by vapor-proof globes and wire guards. Switches for the control of such lighting shall be located outside the building or room, or shall be oil switches or other types suitable for use in the presence of explosive or flammable vapors. There shall be no switches or receptacles for extension cords in any such building or room, except types approved for use with explosive vapors.

51-133. Every vertical means of exit required under that part of this chapter dealing with means of exit from any story for which two exits are required shall have a standard exit sign as required by chapter 66.

51-134. Any lighting in a standard fireproof vault shall be by electricity only. The light shall be controlled by an indicating switch located on the outside of the vault. All such lights shall be equipped with wire guards, keyless sockets, and vapor-proof globes.

Violation of Chapter Provisions

51-135. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 52
GARAGE BUILDINGS

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52-1. A garage building is hereby defined as a building or premises, or part of a building or premises, arranged, designed, intended, altered, converted, or used as a place for the housing, shelter, storage, display, parking, demonstration, sale, servicing, and repair of one or more vehicles containing flammable liquid.

Related occupancies not garages. A building, room, or space for the manufacture, storage, display, or sale of motor vehicles which do not, at the time of their occupancy of such building, room, or space, contain any flammable fuel, shall not be deemed a garage if separated from every garage space by standard fire division walls and standard fire separations, with openings, if any, protected by double standard fire doors. Filling station buildings, not containing any space into which motor vehicles can enter, shall not be classed as garages.

Loading spaces and appurtenant driveways. Loading spaces and appurtenant driveways extending more than five feet into a building or structure when used by vehicles with internal combustion engines are hereby classed as garages, except when used by such vehicle no longer than if necessary for loading or unloading and while in control of the driver on any street level floor within manufacturing units and storage units one story in height, or more than one story in height if of fireproof construction, provided when such loading spaces and appurtenant driveways are within any multi-storied manufacturing or storage unit the areas so used shall be equipped with standard automatic sprinkler systems and the floor construction thereof shall be of incombustible material. Any space in a building or structure which communicates with a garage shall be classed as a garage unless separated from such space by four hour fire-resistive construction and standard fire doors for exterior walls and by standard fire division walls, standard fire separations and double standard fire doors for interior separations.

Basement and first story garages. Any space designed, intended, altered, converted, or used for the purposes of a garage shall be considered a basement if its floor level is more than one foot below the grade at any point, and shall be considered a first story if its floor level is one foot or less below the grade. [Amend. Coun. J. 11-6-40, p. 3432; 5-29-41, p. 4937.]

52-2. Every garage for the purpose of construction requirements shall be classed as either a class 1 or class 2 garage as follows:

Class 1. Every garage with a floor area of more than eight hundred square feet, every garage located in a basement, and every garage located in any story above the first story is hereby designated as a class 1 garage.

Class 2. Every garage with a floor area of eight hundred square feet or less located in a first story is hereby designated as a class 2 garage.

52-3. Every building or structure, or part of a building or structure, designed, intended, altered, converted, or used for garage purposes shall comply with the general provisions of this code pertaining to buildings and with the special provisions of this chapter.

Lot Occupancy

52-4. No part of a class 2 garage of wood frame construction with an area of more than four hundred square feet shall be nearer than four feet to any property dividing lot line or to any building other than a dwelling on the same lot.

52-5. Every class 1 garage located in a basement shall have frontages on at least two open spaces, one of which shall be a street and the other of which shall be a street, alley not less than ten feet wide leading to a street, a court, or other open space not less than ten feet wide leading to a street or public alley of not less width than ten feet.

Construction

52-6. Wherever the construction is required or permitted to be of a specified type, such construction shall meet the requirements of chapter 67 of this code.

52-7. For the purpose of determining the required construction type, the height of a garage shall be deemed to be the height above grade of the topmost floor used for garage purposes in any building. Where the required exit doorways are provided at only one level of a two level street, the story in which such doorways are located shall be considered the first story.

52-8. Every basement garage shall be of fireproof construction.

52-9. Every class 1 garage, one or two stories in height shall be of fireproof, semi-fireproof, heavy timber, or ordinary construction; provided, however, that fireproof construction shall be used for all floor construction other than mezzanines not used for garage purposes and for all columns other than columns supporting such mezzanines or roofs. Every class 1 garage three stories in height shall be of fireproof or semi-fireproof construction; provided, however, that fireproof construction shall be used for all floors other than mezzanines not used for garage purposes and for all columns other than columns supporting such mezzanines or roofs. Every class 1 garage more than three stories in height shall be of fireproof construction.

52-10. Class 2 garages, not more than four hundred square feet in area may be of wood frame or more fire-resistive type of construction, except that the floor thereof shall be of non-combustible material. Class 2 garages more than four hundred square feet in area shall be of ordinary construction or a more fire-resistive type of construction, except that the floor thereof shall be of non-combustible material.

52-11. A parking lot of one level only for the accommodation of motor vehicles may be maintained without enclosing walls, but any building, structure, or part of a building or structure or any mechanism used for any purposes of a garage and containing a basement or more than one level or story, shall be enclosed above the ground level with walls of masonry constructed in accordance with the provisions of chapter 73 of this code. In any mechanism used for garage purposes, the lower ten feet immediately above the grade or ground level shall be considered the first story thereof. [Amend. Coun. J. 2-21-40, p. 2009.]

Size and Location of Rooms

52-12. For the purpose of computing fire division areas in garage buildings, there shall be included with the floor area of the main room or rooms the area of all balconies. There shall also be included the area of all connecting roofed spaces which are to contain any fuel or oil servicing equipment. A fire division area so computed shall not include the area of any ramp, elevator, or passage used solely for the ingress or egress of persons or vehicles, if such spaces are enclosed as required for vertical shafts. Mezzanines not used for garage purposes shall not be included in the computations of fire division areas.

52-13. No fire division area in a class 1 garage shall exceed the area allowed for such garage by that part of chapter 62 dealing with fire division areas.

52-14. Where connecting levels are located within a vertical distance of six feet from each other, such levels shall be considered as parts of the same fire area; provided, however, that the combined area of such different levels, plus the area of all connecting ramps shall not exceed the limits allowed under that part of chapter 62 dealing with fire division areas.

52-15. No garage shall be located on the roof of a building of other than fireproof construction. Any roof area of a building of fireproof construction may be used as a class 1 garage, provided:

(a) That such roof shall be designed and constructed to support a live load equal to the sum of the live load prescribed for a roof and the live load prescribed for a garage floor;

(b) That exit facilities, the same as required for a garage located in a story above the first story, shall be provided from such roof;

(c) That there shall be parapet walls of masonry or reinforced concrete at least four feet high, meeting the requirements of the structural provisions and general provisions of this code pertaining to buildings completely surrounding such roof area;

(d) That there shall be a continuous wheel guard of masonry or reinforced concrete not less than twelve inches high and not less than twelve inches thick, located not less than three feet from said parapet and extending completely around such roof areas, unless said parapet is a concrete wall not less than eight inches thick reinforced in both faces with horizontal and vertical bars and properly tied in with the roof construction and of sufficient strength to resist impact and overturning. [Amend. Coun. J. 11-6-40, p. 3432.]

52-16. Every heating plant and its fuel storage, except for class 2 garages attached to single dwellings, shall be separated from all garage space by standard fire division walls and standard fire separations. Communication, if any, between any garage space and a heating plant or fuel storage space shall be through a vestibule as provided by this chapter for communicating vestibules in multiple use buildings. There shall be no communication inside the building between any class 1 garage space and any space containing a heating plant having a combustion chamber.

Multiple Use Buildings

52-17. Subject to the provisions for multiple uses contained in other occupancy chapters of the building provisions of this code, a garage may be located in the same building with another occupancy.

52-18. Every garage, located in the same building with any other occupancy, shall meet the requirements of that part of this chapter dealing with construction; provided, however, that no garage of other than fireproof construction shall be located in any building containing a dwelling in which the floor of any habitable room is more than twenty-four feet above grade.

52-19. Every class 1 garage shall be separated from every space used for other than garage purposes by standard fire division walls and standard fire separations. Openings for vehicular passage, protected as required for openings in standard fire division walls, shall be permitted in the first story only to communicate with spaces in fireproof buildings devoted to related occupancies as defined in section 52-1. Such openings shall not be considered a required means of exit.

Every class 2 garage shall be separated from other occupancy spaces by construction having not less than a three hour fire-resistive value; except that a garage for not more than two motor vehicles forming a part of, or attached to, any single dwelling shall have a separating construction of one hour fire-resistive construction.

52-20. Except as otherwise provided in other occupancy chapters in the building provisions of this code, pedestrian communication between a garage and any other occupancy shall be permitted in the first story; provided, however, that such communication shall be through a vestibule completely enclosed in walls, floors, and ceiling of a four hour fire-resistive value, not less than five feet in length of travel with a standard fire door in each opening thereto. Such doors shall be hinged to open in the direction of egress from the garage and may be considered as one of the required means of exit. Such doors shall be operable from the garage side without the use of a key and shall be self-closing.

Means of Exit

52-21. Every doorway through an exterior wall, stair enclosure, or fire division wall shall have its sill located at least two inches above the normal adjoining floor levels. The approach to such doorways shall be ramped at a rate not to exceed one-eighth inch per foot.

52-22. There shall be at least two vehicle exit doorways from every garage having a fire division area of more than sixteen thousand square feet in any one story.

52-23. Every required vehicle exit doorway shall open with facilities for the exit of cars into a public way or into an open space not less than ten feet wide leading to a public way or into a tunnel or passage of not less than four hours fire-resistive construction at least ten feet in width leading to a public way or leading to an open space not less than ten feet wide leading to a public way. [Amend. Coun. J. 11-6-40, p. 3433.]

52-24. Every vehicle exit door, located in a required fire division wall or required fire separation, shall have a fire-resistive value at least equal to the value required for the protection of doorways in such locations by chapter 69 of this code. Every such door may be operated manually or mechanically, but shall be arranged to close automatically in case of fire when located in openings requiring standard fire doors.

52-25. In every garage there shall be at least one pedestrian exit doorway in addition to all vehicle exit doorways. In a garage having a fire area of more than six thousand square feet, there shall be at least two pedestrian exit doorways in addition to all vehicle exit doorways; provided, however, that in lieu of one such pedestrian exit doorway there may be an opening through a vehicle exit door as hereinafter provided. There shall be at least one pedestrian exit doorway from the first story to every garage; provided, however, that such pedestrian exit from a class 2 garage may be an opening through a vehicle exit door. [Amend. Coun. J. 12-21-39, p. 1396.]

52-26. In a class 1 garage where only one pedestrian exit doorway is required, the distance on a straight line between the center of such pedestrian exit doorway and the center of at least one vehicle exit doorway shall be not less than fifty per cent of the greatest horizontal dimension of the floor. Where two pedestrian exit doorways are required, they shall be separated by a distance at least equal to seventy-five per cent of the greatest horizontal dimension of the floor. Every required pedestrian exit doorway shall open upon a public way or upon open space not less than three feet wide leading to a public way. A doorway through a standard fire division wall, located as required by this section, shall be accepted as a required pedestrian exit doorway. No exterior doorway of a garage shall be located within six feet of any exterior doorway of any other building on the same lot.

52-27. Every pedestrian exit doorway shall be at least two feet six inches wide and seven feet high, and not more than three feet six inches wide and eight feet high. Every required pedestrian exit door shall swing outward in the direction of egress and shall be operable from the inside at all times without the use of a key.

52-28. A pedestrian opening through a vehicle door shall be not less than two feet wide and five feet high, located not more than one foot six inches above the floor, and hinged to swing outward in the direction of egress.

52-29. There shall be at least one stairway or ramp for pedestrians only, connecting the first floor with every floor above or below the first floor. There shall be not less than two such stairways or ramps from any floor exceeding three thousand square feet in area; provided, however, that a vehicle ramp or an opening through a fire division wall, located as required by section 52-26, shall be accepted as one of such stairways; and provided further, that from every garage located in a basement, except for garages of less than eight hundred square feet in area and attached to a single dwelling, there shall be not less than two stairways leading directly to the outside of the building at grade.

52-30. At least one required stairway or pedestrian ramp shall lead directly to an outside exit doorway at grade into a public way or into an open space not less than three feet wide leading to a public way. Entrance doorways to such required stairways or pedestrian ramps shall be located as provided in section 52-26.

52-31. Every required stairway or pedestrian ramp shall be not less than three feet in clear and unobstructed width.

52-32. Every stairway and pedestrian ramp shall be constructed of noncombustible materials, except for handrails and shall be enclosed as required for vertical shafts.

52-33. Every garage not more than two stories and basement in height, where the floor area of the second floor or of the basement is greater than eighteen thousand square feet exclusive of the area occupied by ramps, and every garage more than two stories in height having a floor area greater than sixteen thousand square feet exclusive of area occupied by ramps, shall not have less than two single-lane vehicle ramps so arranged or marked as to allow only one-way traffic or one double-lane ramp for vehicles connecting each level with the first floor or grade level. An elevator or elevators may be provided in addition to vehicle ramps, but such provision shall in no way modify the requirements of this section or section 52-34 as to number, type or construction of ramps provided, however, that an elevator or elevators may be used in lieu of all required vehicle ramps. [Amend. Coun. J. 2-21-40, p. 2009.]

52-34. Every vehicle ramp shall be of not less than three hour fire-resistive construction. The slope of such ramps connecting levels shall not exceed twenty percent. Where the slope of ramp exceeds sixteen and two-thirds percent it shall not be considered as an exit for pedestrians in accordance with the exit requirement provisions of this chapter, unless the upper surface of the ramp for three feet of its width immediately adjacent to the left edge of same, considered in a downward direction of travel, is constructed in the form of a stairway or a serrated safety tread, such form to be approved by the commissioner of buildings. Single-lane vehicle ramps shall be not less than eleven feet in clear width. The clear width of ramps shall be measured one foot above the floor thereof. A level run not less than twenty feet long shall be provided at each end of every ramp. Double-lane ramps shall be not less than eighteen feet in clear width. [Amend. Coun. J. 2-21-40, p. 2009.]

Windows and Ventilation

52-35. Every window affording required ventilation shall open upon a public way, court, or other open space not less than three feet wide. In class 1 garages every window facing upon any open space less than sixteen feet wide shall be a type A window, and every skylight located within a distance of less than sixteen feet from a property dividing lot line or from the opposite side of any open space shall be a type A skylight. Windows and skylights otherwise shall meet the requirements of chapter 65 and of the general provisions of this code pertaining to buildings.

52-36. Every room or space in every garage shall be provided with openings to the outside air to provide natural ventilation at all times, or shall be equipped with a mechanical system of ventilation meeting the requirements of chapter 81 of this code. Such openings shall, in combined area, equal two per cent of the floor area. Every class 1 garage shall be ventilated as required by chapter 81 of this code. No outlet opening for any mechanical ventilating system in a garage shall be located within sixteen feet from any property dividing lot line or within sixteen feet from the opposite side of an alley or other open space.

52-37. Every basement garage shall have a system of mechanical ventilation, meeting the requirements of chapter 81 of this code. In addition to such mechanical ventilation, there shall be window, sidewalk, or vent shaft openings direct to the open air. Said window, sidewalk, or vent shaft area shall be equal in area to not less than one per cent of the largest floor area served thereby. The required vent shaft area shall be provided with not less than two vent shafts located immediately adjacent to the stairways or ramps. Each such shaft shall be provided with a damper or dampers. Said dampers, when opened, shall provide the required area and shall not obstruct the required area of the shaft. Said dampers shall normally be closed, but shall be so arranged that they may be opened manually from the stairways or ramps.

Heating Equipment

52-38. Except as hereinafter provided, garage heating shall be by means of radiation or connection from hot water, vapor, or steam heating systems of which the boilers or devices containing combustion chambers and the fuel storage spaces shall be separated from every garage space as required by section 52-16.

52-39. No stove, hot air furnace, or similar device containing a combustion chamber shall be installed in any garage, and no system of air circulation shall be permitted to penetrate any required fire-resistive separation or inclosure.

52-40. *Gas unit heaters.* Gas-fired heaters, subject to the following provisions, shall be permitted in garages:

(1) The flame shall be protected from drafts of air and contact with combustible materials.

(2) All gas unit heaters installed in garages shall be installed so that the bottom of the heater shall be not less than eight feet above the floor. They shall be constructed and arranged to conform to the "American Standard Approval Requirements for Gas Unit Heaters," effective January 1, 1936; approved American Standards Association, August 13, 1934.

(3) Nothing in the building provisions of this code shall be construed as prohibiting the use in class 2 garages or in office space of class 1 garages where such spaces are separated from the garage proper by a wall of not less than two hour fire-resistive value of a gas-fired heater constructed and arranged to conform to the requirements for "Private Garage Heaters," approved American Standards Association, December 28, 1932.

Electric unit heaters. Electric unit heaters constructed and installed to conform to the Underwriters Laboratories, Inc., "Standard for Electric Heating Appliances" Third Edition, December, 1936, shall be permitted in garages.

Fire Protection

52-41. Every class 1 garage located in a basement, every class 1 garage four stories or more in height, and every class 1 garage having a fire division area in excess of the area permitted under sections 62-7 and 62-8 of this code, shall be equipped throughout with a standard system of automatic sprinklers conforming with the provisions of chapter 91 of this code. [Amend. Coun. J. 5-29-41, p. 4937.]

52-42. Standard fire extinguishers, as described in chapter 90 of this code, shall be installed in every class 1 garage as follows:

One standard fire extinguisher of the carbon tetrachloride, carbon dioxide or foam type, shall be installed on each floor of two thousand square feet or less area and one such additional extinguisher shall be installed for each additional two thousand square feet or less of floor area; provided, however, that there shall be not more than fifty feet of travel from any point on any floor to the nearest fire extinguisher.

Artificial Lighting and Exit Signs

52-43. Artificial lighting shall be by means of incandescent electric lamps.

52-44. All means of exit in every class 1 garage shall be provided with normal illumination meeting the requirements of chapter 66 of this code, except that the minimum intensity of illumination shall be five-tenths foot-candle at the floor.

52-45. Additional illumination shall be provided in every class 1 garage more than one story in height and in every garage located in a basement meeting the requirements of chapter 66 of this code.

52-46. In every class 1 garage standard exit signs, standard directional signs, and standard fire escape signs shall be provided as required under chapter 66 of this code.

Violation of Chapter Provisions

52-47. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 53

THEATERS

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53-196. Penalty

53-1. Certain terms in this chapter are defined for the purposes thereof, as follows:

Auditorium. That portion of a theater in which are located the seats for the audience. The seats may be on one or more levels. Any such level is herein referred to as a "seating level". The main floor is the lowest seating level of such an auditorium. Such portion of an auditorium located between the rearmost transverse aisle of the main floor and the rear of the auditorium shall be governed by the requirements for mezzanines or balconies as defined in this section.

Balcony. A balcony in a theater auditorium is a partial floor seating level superimposed above the main floor or a mezzanine or another balcony in the auditorium and having more than ten rows of seats extending across the auditorium, exclusive of any row having less than six seats and exclusive of any box at the sides. When there is more than one balcony, the lowest balcony shall be designated as the "first balcony", the next higher balcony as the "second balcony", and so on.

Bank of seats. A row of seats at a different level from the row immediately forward, and located between adjacent aisles or between an aisle and a wall, buttress, railing, guard, or other abutment for a row of seats.

Capacity. The number of persons for whom seats are provided in the auditorium.

Dressing room. A room used or intended to be used by a performer or performers for dressing or changing of clothing.

Employe. Any person engaged in the performance of labor or service having to do with the management of a theater, with the preparation of it for a picture display or theatrical performance, with the conduct or execution of any display, act, or performance therein, with the maintenance of it, or with any other function involved in its operation.

Entrance. A means or route of ingress to a building or room, including a doorway passage, passageway, corridor, ramp, or stairway. A means of exit shall be considered a means of entrance unless prohibited from being used for such purpose under the building provisions of this code.

Foyer. A room adjoining the auditorium and serving as the principal entrance to any seating level thereof.

Group of seats. Two or more seats in one or more rows in any part of the auditorium, arranged together and separated from adjacent seats.

Lobby. A room, other than a foyer, adjoining any public room or public space in a theater and serving as an entrance to such public room or public space.

Main exit floor and main exit level. A floor, or part of a floor, at or near grade or ground level, on which any exit to grade or ground level is located, other than a ground floor.

Mezzanine. A partial floor seating level superimposed above the main floor or another mezzanine in the auditorium and having not more than ten rows of seats extending across the auditorium, exclusive of any row having less than six seats, and exclusive of any box at the sides. When there is more than one mezzanine, the lowest mezzanine shall be designated as the "first mezzanine" the next higher mezzanine as the "second mezzanine".

Principal entrance. That public entrance, from a way of approach for the public to which is apportioned the greater part of so much of the public normal exit width as is under the second paragraph of section 53-51 required to lead to an entrance doorway or doorways from such way· of approach. Where such part of so much of such exit width is so apportioned that there is an equal width leading to two or more public entrances from such a way of approach, the owner may select and designate one such entrance as the principal entrance.

Projection block. That portion of a theater containing a projection room alone or in combination with other rooms appurtenant to the operation thereof.

Projection room. A room in which there is located any projector for motion pictures, any projector for still pictures, or any other light projection device in which flammable film is used.

Property room. A room for the storage of any adjunct of a theatrical act or performance, except scenery, commonly known and described as stage properties.

Secondary entrance. Any entrance for the public, other than the principal entrance.

Stadium type auditorium. An auditorium in which rows of seats raised above other seats but not superimposed above any part of the main floor are located between the rearmost transverse aisle of the main floor and the rear of the auditorium.

Stage block. That portion of a theater containing a stage alone or in combination with dressing rooms, storage and property rooms, work shops, and other rooms appurtenant to the operation thereof. No space open to the public shall be included in any stage block.

Stage workshop. Any shop or room in which carpentry, electrical work, painting, or any other work incidental to the preparation, operation, or maintenance of any stage is done.

Storage room. A room other than a property room used for storage purposes.

Theater. A theater building as defined in section 40-14.

Trap space. A space beneath the floor of a stage used for the handling of stage properties, for placement upon and removal from the stage through trap doors in the stage floor, and in which the lifts and other devices incident to such handling of stage properties are located.

Existing Theaters

53-2. The following sections of this chapter dealing with existing theaters shall apply to theaters in existence on July 13, 1938.

53-3. Such repair and replacement of parts of theaters or their equipment as is necessary to maintain an existing theater in the condition required under the ordinances in effect when such buildings were constructed, altered, or converted for the purposes of a theater, shall be permitted in the forms required under the then existing ordinances; provided, however, that no such repair or replacement shall increase the existing capacity of a theater or reduce the existing width of exits.

53-4. Any alteration of, or any addition to, any theater or its parts, except as described in section 53-3, shall be made to comply with the provisions of this chapter and the general provisions of this code pertaining to buildings.

53-5. Any alteration or remodeling of any portion of a stage block or projection block shall be made to comply with the building provisions of this code and any stage or projection block hereafter altered or remodeled shall be made to comply in its entirety with the provisions of this chapter.

53-6. Any alteration of the seating arrangement or of any means of exit shall be made to comply with the provisions of this chapter, and any such alteration of seating shall require the compliance of all means of exit with the building provisions of this code.

53-7. No alteration or extension of any existing system of heating or refrigeration or any system of piping or machinery in which hazardous gases or liquids are contained, or which are prohibited in a theater under this code, shall be made, unless all parts of such system and the rooms or spaces containing them shall be made to comply with the building provisions of this code.

53-8. Any room in a theater hereafter converted for any use requiring special protection under this code shall be made to comply with the building provisions of this code for such special protection.

New Theaters

53-9. Every building, or part of a building, hereafter designed, erected, altered, converted, or used initially for the purposes of a theater shall comply with the general provisions of this code pertaining to buildings and with the special provisions set forth in this chapter.

Construction

53-10. The working drawings for every theater shall be submitted to the department of buildings for approval and for the granting of a building permit, and shall clearly indicate the exact location of every fixed and portable seat and the arrangement and clear width of every means of exit required under this chapter. On the floor plans of the main floor, any mezzanine and any balcony in the auditorium, the number of seats, both fixed and portable, on such floor shall be stated in conspicuous figures.

53-11. No space shall be arranged to provide standing room for the public in any auditorium nor in any appurtenant space thereto which may be open to an auditorium.

53-12. Every theater having a capacity of more than six hundred shall be of fireproof construction. Non-combustible structural members, supporting a roof only, and located more than twenty feet above the floor directly beneath, need not be fireproofed. The roof slabs, plates, or arches shall have a fire-resistive value of one hour.

53-13. Every theater having a capacity of six hundred persons or less shall be not less fire-resistive than semi-fireproof construction.

53-14. The auditorium of any theater shall be separated from every other part of the theater, excepting the stage block, by not less than one hour fire-resistive construction.

53-15. The enclosing walls, the roof or floor forming the top separation, and the floor forming the bottom separation between the stage block and other parts of a theater or other occupancy shall be of solid construction.

Except as provided for separations between occupancies in multiple use buildings, the enclosing walls, floors, and roofs of any stage block shall be of four hour fire-resistive construction; provided, however, that such enclosure for a type 1 stage shall be of not less than three hour fire-resistive value.

Where no superstructure exists, the inclosing walls of the stage block shall be extended through and above the roof, forming a parapet.

53-16. It shall be permissible to cover the structural floor of any stage with a wood finish floor.

53-17. Every trap door permitted in the floor of a type 2 stage may be of wood, but shall be not less than two and one-half inches thick of solid, not laminated, material, and shall be supported by structural members of non-combustible material.

53-18. That part of every theater in which any dressing room and the exit connections for such rooms are located shall be separated from other parts of the theater by two hour fire-resistive construction; provided, however, that so much of any such separation as is a part of the separating construction required between the stage block and other parts of the theater shall meet the requirements of section 53-15. Dressing rooms shall be separated from each other and from the exit connections thereof by walls of two hour fire-resistive construction. Where the dressing room section is not located within the stage block, any doorway between dressing rooms, or between a dressing room and a horizontal exit connection, may be provided with a combustible door.

53-19. That part of every theater in which any workshop, storage room, or property room is located shall be separated from other parts of the theater by two hour fire-resistive construction; provided, however, that so much of any such separation as is a part of the separating construction required between the stage block and other parts of the theater shall meet the requirements of section 53-15. The wall separation between such rooms shall be of one hour fire-resistive construction, and every doorway in such a separating wall shall be provided with a self-closing door.

53-20. The construction of an inclosure for any projection block shall have a fire-resistive value of not less than two hours. Every window in a projection block enclosure shall be a type A window.

53-21. It shall be permissible in any theater to install and use not more than five fixed cooling or refrigerating units, if not more than four pounds of any poisonous, toxic, irritant, corrosive, flammable, or explosive gas are contained in any of such units.

53-22. In any theater, every room, other than the rooms otherwise provided for under section 53-21 containing any fan, blower, pump, ejector, engine, motor, generator, or other such piece of mechanical equipment, shall have an enclosure with any door or any window therein of the same construction as is required for such items under the general provisions of this code pertaining to buildings; provided, however, that in no case shall any doorway in such an enclosure be a combustible door; and provided further that type A windows shall not be required in such a room unless connected with a shaft or exit court.

53-23. Every door in any doorway in the stage block in storage and property rooms and in the projection block shall be a non-combustible door, unless required to be a sixty minute fire-resistive door or a forty-five minute fire-resistive door.

Every doorway leading from the stage block to another part of a theater shall be closed with a sixty minute fire-resistive door; provided, however, that for type 1 stages, a forty-five minute fire-resistive door may be used.

Every outside doorway from the stage shall be vestibuled, and the inner doorway shall have a self-closing non-combustible door.

Every doorway leading from a trap space below a stage floor shall be provided with a sixty minute fire-resistive door.

Every doorway from the gridiron level to adjacent roof levels shall be provided with a forty-five minute fire-resistive door. Every door located in a required two hour fire-resistive enclosure shall be a forty-five minute fire-resistive door, and every door located in a required four hour fire-resistive enclosure shall be a sixty minute fire-resistive door.

53-24. In any dressing room section not located within any stage block, any base, chair rail, wainscot cap, door trim, window trim, picture moulding, other trim, wainscot or other such finish, and any shelving, make-up table, or other built-in furniture or fixture may be of material not more combustible than wood; provided, however, that any such item located within an enclosure for a vertical means of exit, except a handrail, shall be of non-combustible material. In any dressing room section located within any stage block, every such aforesaid item, except a handrail in an enclosure for a vertical means of exit, shall be of non-combustible material. In every stage block, any stage basement, any stage workshop and every projection block, any such aforesaid item, except a handrail in an enclosure for a vertical means of exit, shall be of non-combustible material.

Size and Location of Rooms

53-25. Not more than one auditorium shall be permitted in any theater. The auditorium in every theater shall have a clear ceiling height of not less than twelve feet; provided, however, that the average clear ceiling height beneath or above any mezzanine or balcony shall not be less than ten feet; provided further, that the lowest point on the soffit of a ceiling or of a beam, girder, or truss projecting below a ceiling shall be not less than eight feet above the floor directly beneath it.

53-26. The highest point of any main floor aisle in any auditorium shall be at such elevation that on any route of normal egress, between such point and grade at the principal entrance to the theater, there shall be no ascending or descending slope of floor or pavement in excess of eight and one-third per cent, one rise in twelve horizontal. On any route of normal egress between such points there shall be no steps. There shall be no limitation of height for any part of any aisle back of the rearmost transverse aisle of the main floor in any stadium type auditorium.

53-27. The lowest point of the main floor shall be not more than seven feet below the level of any public way, exit, court, or other space to which the exit nearest the proscenium leads.

53-28. The main floor of an auditorium may be sloped within the limitations prescribed for the slope of aisles. The main floor, except the floor of the longitudinal aisles, may be constructed as a series of level terraces the width of which shall be one row or space or that portion of a row space not otherwise required for the seat legs or supports; provided, however, that where such terraces abut an aisle, the floor thereof shall be made to meet the aisle without a step or riser by means of ramps, the slope of which shall not exceed the slope of the aisle, unless an aisle, at least two feet wide with steps the full width descending in the direction of the proscenium for a distance not to exceed three seat row spaces, be provided from the highest seat level to the level of the main required longitudinal aisle. Such aisle and steps shall be separated from the main aisle by a handrail, except for the outlet thereof.

53-29. The stage in every theater shall be one of two types which, for the purposes of the building provisions of this code, shall be designated as type 1 and type 2 stages. Each of said types shall conform to the requirements of sections 53-30 and 53-31 and the stage block in which a type 1 stage is located shall be limited in size as prescribed, but there shall be no limit of size for the stage block in which a type 2 stage is located.

53-30. A type 1 stage shall be used only as a sound projection room. Such a stage shall have no provision whatever made for the use of any movable or combustible scenery. No opening for any trap door shall be permitted in the floor of such a stage. Every type 1 stage shall have a stage vent meeting the requirements of that part of this chapter dealing with stage vents, but a fire curtain shall not be required for the proscenium opening of any such stage. The width of a stage block containing a type 1 stage, measured at a right angle to the center line of the auditorium between the inner faces of the enclosing walls, shall not exceed the clear width of the proscenium opening at any point. The depth of such stage block, measured parallel to the center line of the auditorium between the stage face of the proscenium wall and the inner face of the rear enclosing wall, shall not exceed three feet; provided, however, that one hundred eighty square feet of floor area may be added at the rear of the stage to provide space for sound equipment, if the depth, measured parallel to the center line of the auditorium between the stage face of the proscenium wall and the inner face of the rear enclosing wall of such space for sound equipment, shall not exceed nine feet at any point. The highest point of the underside of the roof or ceiling of any such stage block shall be not more than four feet above the higest point of the proscenium opening, and in no case shall such height exceed thirty-five feet above the stage floor. No footlights shall be permitted on a type 1 stage.

53-31. A type 2 stage shall have provisions made for the use of movable and combustible scenery. It shall be permissible to install removable trap doors in the stage floor, and a trap space meeting the requirements of section 53-32 shall be permitted below the floor of such a stage. Every type 2 stage shall have a stage vent meeting the requirements of this chapter dealing therewith. The proscenium opening shall be equipped with a fire curtain meeting the requirements of this chapter dealing therewith. It shall be permissible to form a switchboard pocket in the proscenium wall, but the height of said pocket shall not exceed twelve feet and shall be so constructed that the fire-resistive value of the proscenium wall shall not in any way be impaired.

53-32. Any trap space for a type 2 stage shall be located within an area bounded at the front by a line parallel with, and one foot back of, the stage face of the proscenium wall at the sides by lines parallel with the center line of the auditorium and not more distant from such center line than one-half the clear width of the proscenium opening, and at the rear by a line coinciding with the stage face of the rear enclosing wall of the stage block.

53-33. In a projection room there may be housed one or more motion picture projectors in which nitrocellulose or equally hazardous films are used, and in such room may also be housed one or more still picture projectors, one or more spotlights, or one or more other light projection devices in which nitrocellulose or equally hazardous films are used. Every such room shall have a floor area of not less than fifty square feet for each projector, spotlight, or other light projection device for which provisions are made therein, and a clear ceiling height of not less than eight feet. Any door, trim, shelf, furniture, or fixture in such room and in any appurtenant room within the projection block shall be constructed of, or covered with, non-combustible material. Every opening in such a projection room for the purpose of picture screen or stage observation, or for the operation of any projector, spotlight, or other light projection device shall be equipped with a sliding shutter which shall close automatically by gravity in case of fire. Every such shutter shall be constructed of sheet iron or sheet steel not less than one hundred forty thousandths inch in thickness, shall overlap the opening at least one inch all the way around, shall slide in a grooved frame of the same material installed inside the projection room and securely anchored to the wall. Every such shutter shall be so made and arranged that it shall close easily when operated manually, and drop freely when released automatically. All of such shutters shall be held normally open by a fine, combustible cord, having one hundred sixty degree heat Fahrenheit actuating device suspended above each projector, spotlight, or other light projection device provided for, and so arranged that the burning of the cord at any point, the operation of any heat actuating device, or the manual release of the cord from a point near the exit doorway of the room shall cause all shutters to close quickly and simultaneously. Such cord shall be arranged to offset a constant pull of not less than eight pounds. No provision shall be made in any projection block for storing materials of a combustible nature, except films for one day's operation. Provision shall be made in the projection room or some space within the projection block for the rewinding and storage of films for one day's operation. Every such projection room shall be ventilated as provided under section 53-117, and shall have a toilet room as provided under section 53-37.

53-34. No boiler room or other room in which there is a steam heating plant having a working pressure greater than ten pounds per square inch shall be located under or within twenty feet laterally of an auditorium in any theater, but such a plant shall be permitted elsewhere in any theater, if separated from other parts of the building by four hour solid fire-resistive construction, with every doorway in such enclosure having a sixty minute fire-resistive door. No doorway to any such room shall be located in the auditorium, in any foyer or lobby, or in any corridor or passage directly connected with any auditorium, foyer, or lobby.

53-35. Separate toilet rooms shall be provided for males and females in every theater.

Entrance doors to public toilet rooms for males and females shall be separated by a distance of not less than ten feet. The entrance door to every toilet room for the public shall be plainly marked for males "MEN" and for females "WOMEN." The same shall apply to toilets for employes.

53-36. Toilet rooms for the public containing the respective plumbing fixtures required for both sexes shall be located either on each seating level, or on the floor next above or below the seating level for which such respective plumbing fixtures are installed; provided, however, that general toilet rooms for the public containing all of the plumbing fixtures required in the theater for either or both sexes, may be located on the main floor or on the floor next above or below the main floor of the auditorium; and provided further that auxiliary toilet rooms for both sexes shall also be installed on each seating level, or on the floor next above or below each seating level which is more than one floor removed from the general toilet rooms; and provided also that every such auxiliary toilet room shall contain at least two water closets, or one water closet and one urinal, and at least one lavatory.

53-37. For every projection room designed to house more than one motion picture projector there shall be one toilet room located within the projection block, immediately adjoining and directly accessible from the projection room.

Toilet rooms shall be provided for the dressing rooms of every theater which shall be conveniently located within the dressing room section, and shall contain all of the plumbing fixtures required for the number of persons of either sex for whom dressing accommodations are provided.

Multiple Use Buildings

53-38. Subject to the following provisions of this chapter dealing with multiple use buildings, a theater may be located as a separate unit in the same building with any other occupancy, except a type 1 school or a hazardous use unit, prohibited in a theater under section 51-66 and except also as otherwise provided under chapters 47 to 58 of this code, inclusive.

53-39. Every theater shall be separated from every other occupancy in the same building as provided for in chapter 63 on multiple use buildings. [Amend. Coun. J. 11-29-39, p. 1358.]

53-40. Communication between any theater and another permissible occupancy in the same building shall be permitted in a lobby on the main exit floor of the theater and as provided elsewhere in such multiple use building; provided, however, that additional communication shall be permitted on the respective levels of any existing or proposed and authorized two level street upon which a multiple use building abuts.

53-41. There shall be no communication between a theater and an adjoining or adjacent building, except in the first story; provided, however, that adjoining and adjacent buildings may have communication on any ground floor, subject to the general provisions of this code pertaining to buildings; and provided further that there shall be no opening for communication on any floor between any theater and any adjoining or adjacent building which is an institution building, a type 1 school or a hazardous use unit prohibited in a theater under section 51-66.

53-42. Every doorway in a wall separating a theater from any part of a building used for other than theater purposes shall be provided with a double standard fire door. Except for the purposes of section 53-44, such doorways shall not exceed sixty square feet in aggregate area. In no case shall any two of such doorways be located closer together than twenty feet, measured horizontally between the nearest jambs. In no case shall any such doorway be considered as a means of exit required under this chapter.

53-43. Every means of exit required for a theater under this chapter shall be for theater use only and shall afford no communication with any part of a building used for other than theater purposes; provided, however, that a fire escape serving another permitted occupancy in the same building may be combined for common use with a fire escape other than a fire escape in an exit court, serving a theater, if the width thereof below the point of junction is made equal to the aggregate width required for the fire escapes so combined. No counterbalanced fire escape or other fire escape serving another occupancy shall in any way obstruct or reduce any required means of exit for a theater.

53-44. A garage shall not be permitted above or below a theater in any multiple use building, but a garage shall be permitted elsewhere in any multiple use building in which there is a theater; provided, however, that it shall be permissible to design, construct, and use below a theater in any building hereafter erected, whether a multiple use building or not, a passage to a garage, if such passage be separated from all other parts of the building by solid construction of four hour fire-resistive value, and if such passage be ventilated in accordance with the provisions of chapters 52 and 81 of this code; provided further that such a passage may have a driveway not more than eighteen feet in width for motor cars, and platforms for loading and unloading passengers, but no space for the storage or parking of motor cars shall be included in any such passage, and no flammable liquid or other hazardous material shall at any time be stored therein; and provided also that such a passage shall be provided with double standard fire doors at the garage and with a sixty minute fire-resistive door at the other end.

Not more than one means of communication between any theater and any garage shall be permitted; provided, however, that if there is a passage with a driveway to a garage, as before described, one additional such means of communication through such passage shall be permitted. Such communication between a theater and a garage, and between a theater and such passage to a garage, shall be through a vestibule constructed in accordance with section 52-20. No such means of communication shall be considered as a means of exit required under this chapter.

Means of Exit

53-45. Every room or space open to the public in every theater shall have, in addition to the entrance thereto, an exit arranged to permit passage through and from the room without returning to the place of entrance, except as otherwise permitted under this chapter.

53-46. The means of exit required for every theater shall be of three classes, designated for the purpose of the building provisions of this code, as "Means of Public Normal Exit", "Means of Public Emergency Exit" and "Means of Employes' Exit".

53-47. The means of public normal exit shall include all of the means normally comprising a route of ingress intervening between a way of approach for the public and the auditorium, and providing the usual means of entrances for the public; provided, however, that no means of exit hereinafter defined as a means of public emergency exit shall be embraced by any of the items herein described.

Every doorway, foyer, lobby, passageway, and aisle intervening between the auditorium and a way of approach for the public shall be designated a public horizontal normal exit connection.

Every stairway and ramp, and the enclosed spaces thereof, leading directly or indirectly to a public horizontal normal exit connection on the main exit floor shall be designated a public vertical means of normal exit.

53-48. The means of public emergency exit shall include all of the means of egress provided solely for the use of the public in an emergency intervening between the auditorium and a way of departure for the public; provided, however, that none of the usual means of entrance described in section 53-47 as means of public normal exit shall be included in the means of public emergency exit.

A direct outside doorway at grade or ground level provided solely for the use of the public in an emergency shall be designated as a public outside emergency exit at grade.

An interior stairway or ramp provided solely for the use of the public in an emergency leading to a public outside emergency exit at grade, and an outside stairway, stairway fire escape, or an outside ramp leading from an outside emergency exit to the grade shall be designated as a public vertical means of emergency exit.

A court at grade or ground level provided solely for the use of the public in an emergency leading directly or through a fireproof passage to a way of departure for the public shall be designated as an exit court.

53-49. Any means of public normal exit. and any means of public emergency exit made available for the joint use of the public and employes shall be considered a joint public and employes' exit but shall be designated respectively by the term used therefor in sections 53-47 and 53-48; provided, however. that no means of public emergency exit, except an exit court, shall be designed or arranged to provide a normal exit for employes. Any means of exit provided solely for the use of employes shall be designated respectively as an employes' normal exit or an employes' emergency exit.

53-50. The width of every required means of public exit in any theater shall, except as otherwise provided, be computed on the basis of the seating capacity of the auditorium in accordance with the rules hereinafter given. Other exit width shall be of the specific minimum dimensions hereinafter given.

No doorway, which is a required exit, shall be less than three feet in clear width or less than seven feet in clear height; provided, first, that adjacent doorways required for normal exit, which are separated by mullions or by other divisions not more than ten inches wide overall, may be not less than two feet ten inches in clear width; provided, second, that any doorway to a stairway for the sole use of employes may be two inches less in width than the required width for such stairway; provided, third, that an exit doorway from an orchestra pit may be reduced in clear height to four feet six inches.

No required vertical means of exit shall be less than three feet in clear width, except as otherwise provided for certain stairways for the sole use of employes. No other required means of exit in any theater shall be less than three feet in clear width, unobstructed by any radiator, lighting fixture, or other object, and such clear and unobstructed width shall be maintained from the floor to a height of at least seven feet above the floor.

53-51. The clear width of public normal exit from every theater shall be at the rate of one foot eight inches per one hundred persons capacity, and this minimum width shall be maintained from the normal exits of the auditorium throughout the public normal exit connections by a cumulative increase toward the public outside normal exit doorways, so that the width at any point in any such exit connection shall be at not less than the said rate for the number of persons served at such point.

The entire required width of a public normal exit shall lead to the entrance doorway or doorways of the theater. Not less than two-thirds of such width shall lead to an entrance doorway or doorways from a street or way of approach for the public, and not more than one-third of such width shall lead to an entrance doorway or doorways from a public alley at least ten feet wide, or to another open space serving as a way of departure from the theater and at least ten feet wide; provided, however, that the clear width of such alley or other space shall be as prescribed for the width of an exit court under this chapter for a capacity equal to that of the required emergency exits served by such space, plus the required capacity of such entrance doorways, and this minimum width shall be maintained throughout the alley or other space by a cumulative increase toward the outlet thereof; and provided further that to meet the requirements of the preceding proviso it shall be permissible to set back an alley wall or another wall or walls of any theater building thus to increase the clear width of the alley or other space, and that such increased width shall be maintained throughout the way of departure.

53-52. No drapery or other device shall be permitted to conceal a required exit nor to obstruct the required opening thereof. No mirror or other device shall be so arranged or located as to represent or be mistaken for a means of public exit.

53-53. No roof of any building in which there is a theater shall be designed, erected, altered, converted, or used for the purpose of a promenade for persons attending any display or performance held in the theater.

Public Normal Exit From Auditorium

53-54. Longitudinal aisles shall be required on all seating levels. Such aisles shall be located within the limitations of seating arrangement prescribed in this chapter.

53-55. Every main floor longitudinal aisle with seats on only one side thereof, and every mezzanine longitudinal aisle with seats on only one side thereof shall be not less than two feet six inches in clear width at any point. Every main floor longitudinal aisle with seats on both sides thereof, every mezzanine longitudinal aisle with seats on both sides thereof, and every balcony longitudinal aisle shall be not less than three feet in clear width at any point. Every longitudinal aisle shall be increased in width where necessary to provide a clear width at every point equal to one foot eight inches per one hundred persons served. Such increase shall be cumulative in the direction of normal exit.

53-56. No balcony shall have more than six rows of seats between its front and a transverse side, or more than nine rows of seats between transverse aisles. Every balcony shall have a transverse aisle in back of the last row of seats thereof; provided, however, that if there be a foyer or lobby with its floor at the same level as the highest level of a balcony longitudinal aisle and with an inside normal exit doorway connecting each longitudinal aisle of the balcony therewith, such rear transverse aisle shall not be required. Every vertical means of normal exit for a proscenium box or boxes not directly connected with a main floor longitudinal aisle shall be connected with such an aisle by means of an aisle not less than two feet eight inches wide.

53-57. The clear width of any transverse aisle required or permitted in any theater shall be equal to one foot eight inches per one hundred persons served thereby. The minimum clear width of any transverse aisle, except as permitted in section 53-56, shall be four feet. The clear width of a transverse aisle shall be measured horizontally between vertical planes which exclude every encroachment thereon, which clear width shall be preserved to a height of at least seven feet from the floor of the aisle. A transverse aisle in a balcony and a transverse aisle at the rear of a main floor in a stadium type auditorium may serve both as a means of public normal exit and as a means of public emergency exit, in which case application of the required widths of such means shall be coincidental and not cumulative. Transverse aisles above the main floor may be inclined in the transverse direction to the direction of the aisle at a rate not to exceed one unit of rise to twelve units of horizontal projection.

53-58. No riser or step shall be permitted in any main floor aisle. No ramp in any such aisle of the main floor proper shall exceed a slope of sixteen and two-thirds per cent, one rise in six horizontal. Where steps are necessary in any mezzanine longitudinal aisle, or in any balcony longitudinal aisle, such steps shall be made the full width of the aisle in every case with the rise of each step not more than eight inches, with the cut thereof not less than ten inches, and with all treads of equal width and all risers of equal height; provided, however, that a change may occur in the pitch of the steps adjoining a transverse aisle, if no more than eight steps are involved and if such steps are of uniform pitch. No riser or step shall be permitted in the floor of any transverse aisle. No riser or step to any emergency doorway and no other riser or step shall be permitted to encroach upon the clear width required for any transverse aisle.

53-59. The distance of any seat from a public normal exit doorway from the auditorium, measured along the line of travel, shall be not greater than one hundred fifty feet, and if more than one hundred feet, it shall have not more than one angle or turn.

53-60. *From main floors and mezzanines.* Every main floor longitudinal aisle and every mezzanine longitudinal aisle in any auditorium shall lead directly to an inside normal exit doorway, or, in stadium type auditoriums, to a transverse aisle at the rear of the main floor. The rearmost transverse aisle of the main floor in a stadium type auditorium shall have an inside normal exit doorway, or a vomitory leading to such a doorway, for each side of the auditorium. The clear width of every such doorway shall be at the rate of one foot eight inches per one hundred persons for which it provides exit; provided, however, that in any case no such doorway shall be less in clear width than four feet.

From balconies. Every balcony transverse aisle shall have an inside normal exit doorway, or a vomitory leading to such a doorway, for each side of the auditorium. The clear width of every such doorway shall be at the rate of one foot eight inches per one hundred persons for which it provides exit; provided, however, that no such doorway shall have a clear width of less than four feet.

53-61. The clear width of every vomitory shall be at least one foot more than the doorway to which it leads, but not in any case less than five feet. No vomitory shall have a floor with a slope greater than sixteen and two-thirds per cent, one rise in six horizontal. No doors shall be required between any vomitory and the auditorium or between any vomitory and any foyer above the main floor. Every vomitory shall be so arranged as to enter upon a public horizontal normal exit connection in the direction of or at an angle not more than ninety degrees from the direction of exit.

53-62. *From mezzanines.* Not less than two vertical means of public normal exit shall be provided to serve every mezzanine. Every such means of exit provided shall lead to a public horizontal exit connection on the main exit floor. Entrance to such means of exit shall be direct from the mezzanine, or direct from a foyer or lobby with its floor at the same level as the highest level of a mezzanine longitudinal aisle, and in either case each of such means of exit shall be from opposite sides of the auditorium. Such means of exit shall be so arranged as to enter upon a public horizontal normal exit connection in the direction of or at an angle not more than ninety degrees from the direction of exit.

From proscenium boxes. Not less than one vertical means of public normal exit shall be provided to serve any proscenium box or each tier of proscenium boxes which shall lead to the main floor of the auditorium. Entrance to such means of exit shall be from a doorway, aisle, or passage directly connected with every box served by such means of exit, and shall have a clear width of not less than three feet at any point.

From balconies. Not less than two vertical means of public normal exit shall be provided to serve every balcony. Every such means of exit provided shall lead to a public horizontal exit connection on the main exit floor. Entrance to such means of exit shall be direct from the balcony, or direct from a foyer or lobby with its floor at the same level as the highest level of a balcony longitudinal aisle, and in either case each of said means of exit shall be from opposite sides of the auditorium. Such means of exit shall be so arranged as to enter upon a public horizontal normal exit connection in the direction of or at an angle not more than ninety degrees from the direction of exit.

53-63. The width of every vertical means of normal exit shall be at the rate of one foot eight inches per one hundred persons served thereby; provided, however, that no such means of exit from any mezzanine or balcony shall in any case be less than four feet in width.

The total required width of vertical means of normal exit may be divided equally between the required means, but in no case shall less than thirty-seven and one-half per cent of such total be provided from either one-half of any seating level.

53-64. If a vertical means of normal exit be a stairway with a direct entrance from a mezzanine or balcony, it shall be separated from the auditorium by construction of one hour fire-resistive value; provided, however, that no such separation shall be required between the auditorium and any flight of steps in a vomitory. If such means of exit be a stairway with entrance from a mezzanine foyer or lobby, or with entrance from a balcony foyer or lobby, so much of it as is located in any foyer or lobby may be an open stairway, but such parts of it as are not located in any foyer or lobby shall be separated from the adjoining space by construction of two hour fire-resistive value.

Public Emergency Exit from Auditorium

53-65. In addition to the means of public normal exit required from an auditorium, every theater auditorium shall have means of public emergency exit to a way of departure from the theater as required under the following sections of this chapter dealing therewith.

53-66. On the main floor of the auditorium, such means of public emergency exit shall consist of public outside emergency exit doorways at grade leading directly to the ground level or directly to the pavement level of a public way, exit court, or other open space serving as a way of departure for the public from the theater, and otherwise meeting the requirements of this section.

53-67. The number of banks of seats on the main floor shall not exceed fifteen unless an intervening or cross aisle is provided between each fifteen banks of seats or a direct exit is provided for each aisle.

53-68. On every mezzanine, except as otherwise permitted under section 53-70, and on every balcony means of public emergency exit shall consist of public emergency exits leading to the ground level or to the pavement level of a public way, exit court, or other open space serving as a way of departure for the public and otherwise meeting the requirements of this chapter dealing with public emergency exit from auditorium.

53-69. The clear width of public emergency exits from every seating level of the auditorium in any theater shall be at the rate of one foot eight inches per one hundred persons served thereby.

53-70. The total required public emergency exit doorway width shall serve both halves of the seating level for which required. The division of such total may be equal, but in no case shall less than thirty-seven and one-half per cent of the total be provided for either one-half of any seating level; provided, however, that any mezzanine having less than ten rows of seats, and also having at the end of each longitudinal aisle thereof a public inside normal exit doorway leading to a foyer or lobby with its floor at the same level as the highest level of such aisle, may have no means of direct public emergency exit; and provided further that the required width of public inside normal exit doorway at the end of each longitudinal aisle of such mezzanine shall be increased at the rate of ten inches for each one hundred persons served thereby, and at each side of the auditorium in the foyer or lobby to which such public inside normal exit doorways lead, there shall be provided one public emergency exit to grade, and the combined width of the doorways of such emergency exits shall be computed at the rate of one foot eight inches per one hundred persons seated on the mezzanine.

53-71. On the main floor of every auditorium with a capacity of six hundred persons, or less, the required public emergency exit doorways shall all be located between the proscenium and a point which is not more distant from said proscenium than one-half the distance between the first and last rows of main floor seats; provided, however, that the rearmost transverse aisle of the main floor in a stadium type auditorium shall have a public outside emergency exit doorway at each end thereof.

On the main floor of every auditorium with a capacity of more than six hundred persons, at least fifty per cent and not more than sixty-six and two-thirds per cent of the required public emergency exit doorway width shall be located between the proscenium and a point not more distant from said proscenium than one-half the distance between the first and last rows of main floor seats. The rearmost transverse aisle of the main floor in a stadium type auditorium shall have a public outside emergency exit doorway at each end thereof.

53-72. On every balcony there shall be one public emergency exit doorway located at each end of every required transverse aisle.

53-73. At least thirty per cent of the required emergency exit doorways from the main floor shall be reached without steps. No steps ascending in the direction of egress shall be located outside of the walls of the building, within an exit court, or otherwise exposed to the weather. Not more than five steps ascending in the direction of egress may be located on any level above the main floor inside of, and leading to, any public emergency exit doorway.

Vertical Means of Public Emergency Exit

53-74. For the public emergency exit doorways required at each side of the auditorium on any mezzanine, or mezzanine foyer, there shall be provided at least one vertical means of exit descending from the doorways to the required level at grade.

53-75. For each tier of proscenium boxes there shall be a means of public emergency exit to grade; provided, however, that such means of public emergency exit shall not be required for any tier of proscenium boxes for which two ways of direct escape by means of public normal exits are provided.

53-76. For the public emergency exit doorways required on each side of any balcony, there shall be provided at least one vertical means of exit descending from the doorways to the required level at grade.

53-77. The width of every vertical means of public emergency exit shall be at the rate of one foot eight inches per one hundred persons served thereby, and this width shall be maintained from the first doorway thereto through the length of such means of exit by a cumulative increase toward grade; provided, however, that no such means of exit shall be less than three feet wide in any case.

53-78. In no case shall the means of emergency exit from opposite sides of the auditorium be combined into one vertical means of exit.

53-79. If a vertical means of public emergency exit be an inside stairway, it shall be contained within an enclosure of two hour fire-resistive construction with every doorway having a forty-five minute fire-resistive door. Such a stairway, its enclosure and doorways shall in no case be less in width than is required for the emergency exit doorway it serves. If such means of exit be an outside stairway, no part thereof shall encroach upon the required width of, or otherwise obstruct an exit court below a plane eight feet above the pavement of such court.

53-80. If a vertical means of public emergency exit be a stairway fire escape leading to an exit court, no part thereof shall be counterbalanced, and no part thereof shall encroach upon the required width of or otherwise obstruct such a court below a plane eight feet above the pavement thereof. If such means of exit be a stairway fire escape leading to a public way, it shall be permissible to counterbalance the lower flight thereof, but no part thereof shall encroach normally upon a public sidewalk below a plane twelve feet above the pavement of such sidewalk, and no part thereof shall encroach normally upon a public alley below a plane fourteen feet above the pavement of such alley. Every such fire escape shall have a ladder extending from its topmost landing to the roof of the auditorium, except where other stories are superimposed thereon or unless located in an exit court having a ceiling. It shall be permissible to install any such fire escape on any street, except where prohibited by law or by any other provisions of this code.

53-81. If a vertical means of public emergency exit be a ramp, it shall not exceed a slope of sixteen and two-thirds per cent, one rise in six horizontal, and shall conform with such of the requirements for a stairway as are applicable.

53-82. Whether a vertical means of public emergency exit be a stairway, fire escape, or ramp, there shall be a level landing at every public emergency exit doorway leading thereto, which shall be not less than four feet wide and at least two feet longer than the width of the doorway.

53-83. Whether a vertical means of public emergency exit leading to an exit court be a stairway, fire escape, or ramp, it shall issue upon the pavement of the court in the direction of egress therefrom.

Exit Courts

53-84. Every required emergency exit doorway which does not open directly upon a public way, or upon another space serving as a way of departure from the theater, shall open directly upon an exit court leading directly or through a fireproof passage to a public way, or another open space serving as a way of departure for the public.

53-85. The floor or pavement of every exit court and passage shall be generally level or ramped to meet the level of the public way or other space to which the court leads. If ramped, such pavement shall have a slope not greater than sixteen and two-thirds per cent, one rise in six horizontal. No step, areaway, trap door, coal hole, or other opening shall be constructed in such pavement anywhere, or in the pavement of the public way or other space opposite the exit from such a court or passage. If there is any space below the floor or pavement of such a court or passage, it shall be separated from the court or passage by four hour fire-resistive solid construction. Every such court and passage shall be arranged to drain so that it shall not hold water.

53-86. The walls of every exit court and passage shall be of four hour fire-resistive solid construction. No doorway shall be permitted in any wall of any such court, except a doorway from a theater. Every door in any doorway permitted in such a court shall be a forty-five minute fire-resistive door. No window shall be permitted in any wall of an exit court having a ceiling of such nature as is permitted under section 53-87. Windows shall be permitted in the walls of any other exit court. Every such window and every window which is located above an exit court and below a level thirty feet above the top of the highest emergency exit doorway in such court shall be a type A window.

53-87. Every exit court shall be open and unobstructed to the sky; provided, however, that outside stairways or fire escapes permitted under this chapter shall not, for the purposes of this section be considered as obstructions; and provided further that any such court may be covered with a ceiling of four hour fire-resistive solid construction, if natural ventilation is provided at the top of the court by one of the following means:

By an opening unobstructed to the sky produced by offsetting the top of the court a horizontal distance not more than two and one-half times the maximum width of the court, said opening being no less in area and said offset being no less in cross-sectional area than seventy-five per cent of the floor area of the court.

By an opening or openings to the outside air in a wall or walls of the ceiling of the court, said opening or openings aggregating in area seventy-five per cent of the floor area of the court.

By an opening or openings, such as described under the preceding paragraph, into a tunnel of no lesser area than such openings and not longer than two and one-half times the maximum width of the court and leading directly to the outside air. If any ceiling is provided in any such court, no part of it shall be lower than one foot above the top of the highest public emergency exit doorway leading to such court. If there is a passage such as described in connection with such a court, such passage shall have a ceiling of four hour fire-resistive solid construction, and the clear ceiling height of such a passage shall be not less than eight feet.

53-88. Every exit court shall have a clear width based upon the aggregate number of persons served by the public exit doorways opening thereon in accordance with the following table:

Required Width of Exit Courts

Maximum number of persons served	Minimum width in feet
300	5
400	6
500	7
600	8
700	9
800	10
For each additional 250 or fraction thereof	1 foot additional

Such a court may be of the maximum required width for its entire length, or may be of the minimum width permissible under the aforesaid rules at the doorway which is most remote from the outlet thereof and be increased in width in accordance with the aforesaid rules in the direction of egress. The width of any passage such as described in connection with such a court shall be not less than the maximum width required for such court.

53-89. Every public alley or other space serving as a way of departure from such a court or passage shall have a clear width of not less than ten feet; provided, however, that such alley or other space shall provide an outlet or outlets equal in width to the requirements under this chapter for an exit court serving the number of persons for whom emergency exit is provided combined with the capacity in number of persons of all normal exit doorways discharging therein.

53-90. No exit court or passage shall be designed, erected, altered, converted, or used for any other purpose than that of exit of the public from a theater; provided, however, that an exit court may also serve as a means of normal or as a means of emergency exit for employes of the theater. Where two theaters are erected on one lot as defined in section 40-1 of this code, one exit court may be used in common by both theaters; provided, however, that such court shall meet the requirements for an exit court serving that theater which has the greatest capacity.

53-91. No object shall be permitted to obstruct or reduce the required dimensions of such a court or passage other than permitted under this chapter; and except as the outside opening of such a court or passage, where the clear width may be reduced one foot and the clear height may be reduced to seven feet to allow for gates or doors. Any gate or door provided at such an opening shall be of non-combustible material. Any radiator, pipe, or other object located in such a court or passage shall be recessed to avoid obstruction.

Exit from Other than Auditoriums

53-92. Every room open to the public and not otherwise provided for under this chapter shall have at least one public inside normal exit doorway opening upon a public horizontal normal exit connection or a public vertical means of normal exit which shall have a width of not less than four feet.

53-93. Every room open to the public in any theater having a floor area greater than one hundred square feet and every group of adjoining connecting rooms having a combined floor area greater than three hundred square feet shall have, in addition to the normal exit doorway, one means of public emergency exit. The means of normal exit and the means of emergency exit from every such room shall be so arranged as to permit passage through and from the rooms without returning to the place of entrance. No part of any such means of emergency exit shall have a clear width of less than three feet.

Employes' Exit

53-94. Every room or space to be occupied by employes and not open to the public shall have in addition to the means of normal exit, one means of emergency exit the same as required for public rooms; provided, however, that any room opening directly upon a horizontal exit connection providing access in two opposite directions to a means of exit shall not require an emergency exit. A permanent non-combustible ladder is permitted as a means of employes' emergency exit. No part of any means of employes' normal or emergency exit, except as otherwise permitted under this chapter, shall be less than three feet wide.

53-95. Every type 2 stage block shall have at least two outside exit doorways, each of which shall open directly upon a public way, exit court, or other way of departure for the the public. Such doorways shall be located at opposite sides of the stage block.

53-96. Every employes' exit stairway, except as otherwise provided under section 53-98, and also except as otherwise permitted under section 53-50, shall be a forty-five minute fire-resistive stairway or a stairway of greater fire-resistive value. Any such stairway may serve more than one such level. Any such stairway may also be combined with other such stairways, if beyond the point of junction in the direction of egress the width of the combined stairway is made equal to seventy-five per cent of the aggregate required width of the stairways so combined.

53-97. Every stairway from such part of any basement as is occupied or frequented by employes and is not regularly open to the public, and every stairway from any dressing room level, shall have a width of not less than three feet.

53-98. One of the required exists from every gridiron may be a winding or spiral stairway, and shall extend to the roof of the stage block or to a doorway near the ceiling of the stage block, which roof or doorway shall lead to a fire escape or other vertical means of exit descending to grade. Every such stairway shall be constructed entirely of non-combustible material. Any penthouse for such a stairway shall be of construction not less fire-resistive than is required for the building with every door thereof a forty-five minute fire-resistive door and every window thereof a type A window.

Required Stairways

53-99. Every stairway in every theater shall be of non-combustible material, except the handrails which may be of wood. Every stairway in any theater shall meet the requirements of the general provisions of this code pertaining to buildings which are applicable to the type of stairway required, except as otherwise provided under this chapter.

53-100. No stairway for a public normal exit or for a public emergency exit shall have any winder therein.

53-101. Any required public stairway may be a curved stairway; provided, however, that no cut or tread thereof shall be less than nine and one-half inches wide, exclusive of nosing, measured tangent to the curve of the stairway at a point one foot from the face of the newel post, string, wall, or guard on the narrow side of the tread. No such stairway shall have its inner side curved to a radius of less than five feet, except at a newel post or finial.

53-102. There shall be a handrail on both sides of every public stairway.

53-103. Every employes' normal exit stairway and every employes' emergency exit stairway shall have a clear width of at least two feet six inches, except as otherwise provided under section 53-97.

53-104. No winding or spiral stairway for employes' use shall be permitted in any theater except where otherwise permitted under section 53-98.

53-105. Every non-required stairway shall conform to the requirements of this chapter for similar required stairways.

53-106. A ramp may be used in lieu of a required stairway; provided, however, that all of the requirements for a stairway in such location which are applicable to a ramp shall be met. No ramp shall have a slope greater than sixteen and two-thirds per cent, one rise in six horizontal, and where so required under this chapter, a ramp shall be limited to a lesser slope.

53-107. A fire escape may be installed in lieu of a required emergency exit stairway where permitted under, and subject to, the provisions of this chapter dealing with vertical means of public emergency exit, but shall not be permitted as a substitute for any other required stairway in a theater. Every fire escape for public use and every fire escape for any dressing room section shall be a stairway fire escape. A chute or slide fire escape may be used for emergency exit from any fly gallery, paint bridge, gridiron, or loft of any stage.

Exit Doors

53-108. Every exit door shall swing outward or in the direction of egress and shall not in any position obstruct the required width of any means of exit; provided, however, that doors of rooms not open to the public may open into any horizontal means of exit if said doors be arranged to swing through an arc of one hundred eighty degrees and not obstruct the required width of exit when fully open.

53-109. No door or other closure for any outside doorway shall, when opened, project over a public way or other public space, except as otherwise permitted under the following paragraph of this section.

Any door in any emergency exit doorway shall be permitted to project when opened over a public way, or other public space for a distance not exceeding eighteen inches, but no recess or vestibule for such a door shall in any manner encroach upon any public space.

53-110. Every door in any public inside normal exit doorway of the auditorium shall be a non-combustible door. Every door in any outside normal exit doorway may be a combustible door, unless otherwise provided under this chapter.

53-111. Every door in any emergency exit doorway shall be a forty-five minute fire-resistive door; provided, however, that if an inside normal exit doorway is considered as a public emergency exit from a room other than the auditorium, as permitted under section 53-93, any door therein may be a combustible door.

53-112. Any lock or other fastening device, used on any door or other closure for an opening of a required exit, in any theater shall be of a type which may be released by any person at any time seeking egress from the theater without the use of a key or other detached opening devices.

53-113. No locking device shall be installed on any door of any public exit or on any door of any employes' outside exit doorway; provided, however, that any such door may be fitted with panic hardware; and provided further, that for any door at the principal entrance it shall be permissible to use any locking device.

Windows and Ventilation

53-114. No window opening in any theater shall have installed therein any grillage of bars, any other grillage or grillework, or any other object which would prevent escape through the opening in any emergency; provided, however, that this requirement shall not apply to windows which occur in spaces not open to the public.

53-115. No windows shall be required in the walls of any type 1 stage and no windows shall be permitted in the walls of any type 2 stage.

53-116. In a wall separating any foyer or lobby from the auditorium of any theater, it shall be permissible to install glazed openings, other than the required doorways, in the main exit story only. Such openings shall not exceed in area forty per cent of the area of such wall, exclusive of all doorways therein. The area of such wall shall be measured on that side of the wall which has the least area. Every such opening shall be glazed with wired glass. No pane of glass in any such opening shall exceed seven hundred twenty square inches in area, nor forty-eight inches in its greatest dimension. A frame shall be provided for every such opening, which shall be of metal or kalamein construction, and shall be securely anchored to the wall construction. Every glass stop, any sash, and every division between panes of glass shall be of metal or kalamein construction. No such panes or sash shall be made to open.

53-117. No system of mechanical or forced ventilation shall be required for any stage.

Stage Vents

53-118. Every stage in any building hereafter designed, erected, altered, converted, or used for the purposes of a theater shall be provided with a means of natural ventilation so arranged and equipped as to function in case of fire.

Such means of ventilation shall consist of not less than one vent nor more than three vents to the outer air meeting the requirements of the following sections of this chapter dealing therewith.

53-119. The stage opening to every stage vent shall be located in the soffit of the ceiling or roof of the stage; the center of such opening shall be within a radius of twenty feet of a point located on the center line of the proscenium opening and half way between the proscenium walls and the rear wall of the stage, if there be but one such vent; or, the center of such opening shall be within a radius of five feet of the center point of its respective zone of stage area if there be more than one such vent. From such opening a shaft shall be extended through the ceiling and roof to a point not less than fifteen feet above the roof, or above any other roof which is within a horizontal distance of ten feet from the shaft at any point; provided, however, that in no case shall any such shaft serve more than one such opening; and provided further that in lieu of being vertical, all or any part of such shaft may form an angle of not more than thirty degrees with the vertical; and provided also, that the sum of the changes in direction of any such shaft shall not in any case exceed one hundred eighty degrees.

53-120. The area of the stage opening of any stage vent, or the aggregate area of such openings, shall be not less than five per cent of the floor area of the stage. The cross-sectional area of the shaft connected with any such opening shall in every case be not less than the area of the opening.

53-121. The enclosure for the shafts of any stage vent shall be of not less than two hour fire-resistive construction; provided, however, that so much of any such shaft as is passed through any part of a building used for other than theater purposes shall be of solid construction having a not less than four hour fire-resistive value.

53-122. The stage vent shall be provided with a damper or dampers which shall tightly close the opening and shall be formed of sheet iron or steel not less than one hundred twenty-five thousandths of an inch in thickness.

The damper or dampers of every stage vent shall be equipped with a mechanical device which, when operated manually or automatically, shall so function as to cause the damper or dampers to open fully. The use of an electrical device for such purpose shall not be permitted. Such damper opening device shall be so made, arranged, and equipped that the damper or dampers may be opened manually and instantly from the stage electrician's station. Such damper opening device shall also be made, arranged, and equipped that, in case of fire, it shall be operated automatically by the actuating of a thermostatic device located under each stage vent. Such thermostatic devices shall be actuated as a result of a difference in the rate of rise in temperature, rather than as a result of an increase in temperature. At the stage electrician's station there shall be a conspicuous non-combustible sign on which plain directions, as to how to open the stage vent damper or dampers, shall be given in letters at least four inches high. Such lettering shall be in white on a black field.

53-123. The top of the shaft of every stage vent shall have a hood constructed entirely of non-combustible material, and the eaves thereof shall project not less than one foot. Openings in all walls of the shaft shall be provided below such hood, which opening shall aggregate in the clear not less than the cross-sectional area of the shaft. The curbs of such openings shall stand not less than fifteen feet above the roof.

53-124. No opening in any stage vent shall be located within a horizontal distance of ten feet from any property dividing lot line measured at any point.

53-125. No window, doorway, or other wall opening on the same premises shall be located within a horizontal distance of twenty feet from any opening in a stage vent measured at any point.

53-126. No building hereafter designed, erected, altered, converted, or used for the purposes of a theater, which is required to have a stage vent, shall be opened to the public for any purpose, unless and until each stage vent and all of its appurtenances have been subjected to and have satisfactorily passed the operating tests prescribed in section 53-127, and have been made to comply fully with the building provisions of this code. When each stage vent and all of its appurtenances have passed said initial operating tests and have been found by examination to comply fully with the building provisions of this code, a certificate to that effect shall be issued to the owner, manager, or other person in control of the theater by the commissioner of buildings, and approval of the installation shall be given by the said commissioner. If any stage vent and all of its appurtenances have not passed said initial operating tests, or have been found by examination not fully to comply with the building provisions of this code, no such certificate shall be issued and no such approval shall be given by the said commissioner, and he shall notify the owner, manager, or other person in control of the theater, in writing, of the reasons for his action. Such certificate shall be posted under glass in a conspicuous place on the stage for a period of thirty days after the date thereof, and during such period shall serve the purposes of the certificate of inspection required under other building provisions of this code.

53-127. Upon completion of the installation, each stage vent and all of its appurtenances shall pass a test by the department of buildings, which test shall demonstrate that each of the devices for operation and control, required under this section, are properly operative. Such tests shall be made by the department of buildings at the same time that the initial curtain operating tests, required under section 53-160 are made. Should the damper or dampers fail properly to operate according to the true meaning and intent of the building provisions of this code, or should any part of the construction of any stage vent be found not to comply with the building provisions of this code, the cause of such failure shall be removed and the part not in conformity with the building provisions of this code made to conform by the owner, manager, or other person in control of the theater, and the required operating tests repeated by the department until operation of the damper or dampers and the construction of every stage vent are found to comply with the building provisions of this code.

Seats

53-128. No row of seats shall have more than twelve seats between aisles or more than six seats abutting an aisle at one end only; provided, however, that on the main floor, if the distance between rows is increased above that required by section 53-129, the number of seats between aisles may be increased by one seat for each one inch by which the distance between rows exceeds that required by section 53-129; and provided further that if such distance is increased by eight inches, rows of forty-eight seats or less and eighty feet or less in length shall be permitted between aisles; and provided also that if more than nineteen seats are placed between aisles then such aisles shall be increased in width where necessary to provide a clear width equal to twenty-five inches per one hundred persons served at every point. In no case shall a row of seats abutting an aisle at one end only have more than ten seats. No curved row of seats shall describe an arc of more than ninety degrees between aisles.

53-129. In every theater auditorium, rows of fixed seats shall be spaced at least two feet ten inches apart, measured horizontally between the rearmost points of seats in adjacent rows; and the minimum distance, measured horizontally between parallel vertical planes touching the rearmost point of the back of any seat and the foremost point of an arm of any seat in the row next to the rear, shall be one foot four inches; except as otherwise provided under section 53-132.

53-130. Arms or other divisions between sittings shall be provided for all fixed seats. The minimum width of ninety per cent of the fixed seats in any auditorium shall be twenty inches, measured between the centers of the arms thereof, or of other divisions between sittings. The minimum width of the remaining ten per cent of such seats shall be nineteen inches, measured in the same manner.

53-131. Every seat in any theater auditorium shall be securely fastened in place; provided, however, that in any box one portable seat or chair shall be allowed for each five square feet of floor area of such box; provided further that in no case shall any box have more than twenty portable seats or chairs; and provided also that no portable seat or chair shall be permitted on any sloping floor.

53-132. On the main floor of every auditorium, at least two complete rows of fixed seats, opposite every public emergency exit doorway, shall be of a self-raising type. The minimum clearance between a rearmost point of the back and the foremost point of an arm, or of the seat when raised, shall be one foot six inches, measured as stated under section 53-129.

Proscenium Fire Curtains

53-133. No fire curtain shall be required for the proscenium opening of any type 1 stage.

53-134. The proscenium opening of every type 2 stage shall have a curtain meeting the requirements of the following sections of this chapter dealing with proscenium fire curtains; provided, however, that an asbestos cloth curtain shall not be used where the proscenium opening exceeds twenty-eight feet in width, or twenty-two feet in height, or the seating capacity of the auditorium exceeds six hundred.

53-135. The proscenium opening between any auditorium and a type 2 stage shall have a vertically operated curtain. The curtain shall be so constructed and installed as to intercept hot gas, flame, and smoke. The period of protection shall be taken as not less than thirty minutes, and the fire-resistance of the curtain during such period shall be such as to meet the test prescribed under section 53-160; provided, however, that the subjection of any curtain to such test shall be required only where stipulated under said section. The full closing of the curtain in case of fire shall be effected in less than one minute from the full open position, but the last five feet of travel shall require not less than five seconds nor more than fifteen seconds. The curtain shall be so arranged and maintained that it will at all times descend safely and close completely the proscenium opening. No paint in which oil is used and no combustible material shall be applied or attached to the curtain, unless sprinkler heads, attached to a standard system of automatic sprinklers, are installed in the auditorium immediately over the proscenium opening in accordance with the provisions of section 53-174, in which case such paint material may be used on the auditorium side of the curtain.

53-136. The curtain shall have sufficient strength to resist a lateral pressure of ten pounds per square foot of its area when in a closed position, with a factor of safety of not less than two on the ultimate strength of the construction. The mounting and details shall be such as to insure ready and positive closure of the curtain while subjected to a lateral pressure of five pounds per square foot, and ability to retain contact with the stage floor when closed while under such pressure. The design strength of every tension member shall be based on a center deflection of not to exceed one-tenth of the span under ordinary temperature. In no case shall the maximum deflection of any part cause a permanent set or bend in the curtain structure, nor shall it cause the curtain to chafe against the wall at the edges of the proscenium opening, nor shall it be such as otherwise to interfere with the proper operation of the curtain. Provisions shall be made to prevent the curtain from getting away from the guide rails, when subjected to lateral pressure due to suction from the stage side. To accomplish this, it shall be permissible to use a curved curtain, so installed that the concave side will be toward the stage; provided, however, that the middle ordinate of the curve in any such curtain shall not exceed two inches. Provisions shall be made for the expansion of the curtain and guides due to changes in temperature. An allowance of one-sixteenth inch per foot of length of steel members shall be made for such purpose. The calculations for the strength of the curtain, curtain mountings, and all the details thereof shall conform to generally accepted engineering methods and practice, unless hereinafter required to conform with other specific rules. The stresses in materials shall not exceed those prescribed in the structural provisions of this code pertaining to buildings. No part of any curtain shall be supported by or fastened to any combustible material.

53-137. The thickness of the curtain shall be not less than one one-hundred-twentieth of the width of the proscenium opening in any case. The arrangement of the structural members of the curtain framework shall be such as to secure a positive separation of the coverings on the two sides with an air space between, equal to the required thickness of the curtain less the aggregate thickness of the coverings, but not in any case less than five inches.

53-138. The curtain shall have a rigid structural framework of steel, covered either with sheet metal and insulation or with asbestos cloth, as provided under sections 53-141 and 53-142. Members of the framework shall consist of tubes, structural shapes, or bars, horizontal members being spaced not more than eight feet apart, and vertical members not more than ten feet apart.

53-139. The bottom of the curtain shall have securely fastened thereto a yielding pad entirely of non-combustible material, not less than five inches in thickness and height, to form a seal against the stage floor.

53-140. For engagement with the guides, the sides of the curtain shall be equipped with sliding metal shoes which, for a curtain twenty-eight feet or less in width, may be of cast iron, and for a curtain over twenty-eight feet in width shall be of cast or forged steel smoothly finished; provided, however, that in lieu of sliding shoes the curtain may be equipped with wheeled trolleys.

53-141. A curtain covered with sheet metal and insulation, for the purposes of the building provisions of this code, shall be designated as a "metal curtain." Each metal curtain shall have its front or auditorium side covered with well fitted steel sheets, not less than three hundred seventy-five ten-thousandths inch in thickness. Such sheets shall be applied directly to the curtain frame and well secured in place, all joints between sheets being properly sealed with fire-resistive cement. The back or stage side shall be covered with insulation consisting of two inch thick fused asbestos air-cell boards, weighing not less than three and six-tenths pounds per square foot, made of alternate flat and corrugated asbestos sheets cemented together and fused under a temperature of not less than one thousand degrees Fahrenheit; provided, however, that in lieu of such fused asbestos air-cell boards, asbestos insulation boards one inch thick, weighing not less than four and six-tenths pounds per square foot, having both surfaces formed of solid asbestos mill board not less than one-fourth inch thick, and having a core formed of two thicknesses of corrugated asbestos separated by a single thickness of flat asbestos, may be used. The insulation shall be applied against the curtain framework and secured thereto by means of suitable metal fastening devices, and the joints between boards shall be solidly filled with fire-resistive cement. The metal marginal members of the curtain frame on the stage side shall be insulated in the same manner or in other manner fully equivalent thereto.

53-142. A curtain covered with asbestos cloth shall be designated as an "asbestos cloth curtain." Such asbestos cloth curtain shall have its framework covered on both sides with asbestos cloth applied in full width strips continuous from top to bottom of the curtain. The metal marginal members of the curtain frame shall have the covering cloth extended around them to form insulation of at least two thicknesses for the edges of the curtain. The covering cloth shall be metal-reinforced, close-woven asbestos cloth weighing not less than three and one-fourth pounds per square yard. The metal reinforcement for the covering cloth shall be incorporated in the yarn before weaving, and shall consist of wire of either monel metal, nickel, brass, chromel, nichrome or other metal or alloy having not less strength at a temperature of one thousand seven hundred degrees Fahrenheit, and not less resistance to corrosion at ordinary temperature, than the least of said metals or alloys. The wire may be either single or double, but the strength in tension of the wire in each strand of yarn shall be not less than seven pounds, and the strength in tension of the yarn with the wire shall be not less than twelve pounds when determined on a four inch length between the gripping jaws of the testing machine at ordinary temperatures. The strength of the cloth in tension shall be not less than one hundred eighty pounds per inch of width of warp and eighty-five pounds per inch of width of filling, when tested in strips one inch wide with a four inch length between the jaws of the testing machine at ordinary temperatures. The head of the asbestos fiber of the yarn may contain cotton or other combustible fiber in an amount not to exceed four per cent of the weight of the asbestos. The total carbon content of the cloth shall not exceed two and one-half per cent of the total weight of fiber. The strips of cloth shall be lapped not less than one and one-half inch and sewed with two lines of stitching of asbestos thread having a wire core, which shall be of the same or greater strength than the yarn of the cloth. The cloth shall be secured to the front and back of the curtain by clamping strips of one and one-fourth by five-sixteenths inch half-oval steel, or steel strips of other shape and equivalent section, extended entirely around the curtain at all edges and across the curtain, spaced at intervals of eight inches measured vertically from center to center, and secured to the structural members of the curtain framework by means of one-fourth inch bolts or tap screws spaced eight inches on centers. After erection, the asbestos cloth on both sides of the curtain and on the marginal members of the curtain frame shall be filled with a mineral paint having a silicate of soda binder, to which may be added casein in the proportion of not more than four parts casein to ten parts of concentrated solution of sodium silicate. Such paint shall be applied hot and brushed well into the cloth so as to make it practically gas and smoke tight.

53-143. The curtain shall be guided throughout its travel by rigid steel guides and shall have a smoke pocket at each side. Each guide and smoke pocket shall be designed to form a stop between the curtain and the wall to intercept gas, flame, and smoke. Each guide shall be built integral with its respective smoke pocket, and shall extend from the stage floor to a height of at least twice the height of the proscenium opening plus five feet. The surfaces of each guide which contact with the guide shoe, or the trolley wheels shall be planed smooth. Each smoke pocket shall consist of not less than a nine inch steel channel guide post and a fourteen by one-fourth inch steel guard plate or shall consist of not less than equivalent sections, exclusive of such other members as may be necessary to form the required stop between the curtain and the wall. Such guides and smoke pockets shall be securely bolted at least every four feet to suitable steel anchors built into the wall, or shall be secured in place by not less than three-fourth inch bolts so spaced and extended through the wall, or shall be riveted to structural steel framing of the building. Where the main curtain members carry the stresses from lateral pressure on the curtain as suspension tension members, the guides and their attachment to the building shall have adequate strength to carry safely the reactions from such tension members. The top of the curtain shall have a smoke stop fitted to intercept gas, flame, and smoke. Such smoke stop shall be of the sand box type conforming to the description in the following section.

53-144. The smoke stop shall consist of two channels formed of sheet steel not less than six hundred twenty-five ten-thousandths inch thick, set level, and made continuous for the entire width of the curtain. One channel shall be secured to the proscenium wall, being set with its flanges extending upward so that its web will form a bottom, having its free ends closed, and being filled with clean, fine sand to a depth of at least three inches. The other channel shall be secured to the top of the curtain, being set with its flanges extending downward so that its web will form a top, and with one flange located midway between the flanges and extending down to within one inch of the web of the other channel. The stop shall be otherwise so made and installed that whenever the curtain is closed the channels will engage in such manner that the sand will form a positive seal between them; provided, however, that a smoke stop of other character than the sand box type may be used for the top of the curtain, if the type proposed is proven to be equally effective under all circumstances and conditions that may arise in the operation of the curtain.

53-145. The curtains required in any theater with a type 2 stage shall be of the one piece type or a two piece sectional type curtain.

53-146. A two piece sectional type curtain may be used for the proscenium opening if it complies with the following requirements:

(1) Such curtain is a metal curtain meeting the requirements of section 53-141;

(2) The sections of the curtain are so made, arranged, and installed that when operated in any required manner both sections shall open or close simultaneously, the lower section being made to travel at a rate of speed which is twice that of the upper section;

(3) The joint between sections of the curtain is provided with a smoke stop of the same character as that required for the top of the curtain; and

(4) Such curtain is otherwise made to comply with so many of the requirements stipulated under this section for a one piece type curtain as are in any way applicable to a sectional type curtain.

53-147. Every drum type curtain shall be hung on steel cables, one at each intermediate point not over ten feet apart, there being not less than four cables in any case. Each cable shall be not less than one-half inch in diameter, shall be attached to the top of the curtain and also attached to a drum, not less than twenty inches in diameter, all drums being keyed fast to a heavy rolled steel operating shaft. The operating shaft shall run in machined and self-lubricating journals, one on each side of each drum and one at each end. The journals shall rest on substantial non-combustible supports on which no fireproofing shall be required.

53-148. Every drum type curtain shall be balanced by two sets of counterweights only to such extent as provided under section 53-152, one set of counterweights being located at each side of the curtain. Each set of counterweights shall be supported by two cables not less than one-half inch in diameter, each of which shall be attached to a not less than twenty inch diameter drum keyed fast to the operating shaft. The counterweights in each set shall be connected together with one inch tie rods. Each set of counterweights shall operate on not less than two and one-half by two and one-half by three-eighths inch steel tee bar guides, or steel guides of other equivalent shapes, secured to the proscenium wall by not less than two and one-half by three-eighths inch steel U brackets, or steel brackets of other equivalent design. Each bracket shall be secured by two bolts built into the wall. The counterweight guides shall be set on the stage floor and continue for the full travel of the counterweights, plus at least five feet. The counterweight guides and counterweight hoistway shall be inclosed with a sheet steel guard, not less than six hundred twenty-five ten-thousandths inch in thickness, to a height of eight feet above the stage floor.

53-149. A drum type curtain shall not be used for any proscenium opening which is more than fifty feet in width.

53-150. Every sheave-type curtain shall be hung on steel cables, one at each end and one at each intermediate point not over ten feet apart, there being not less than four cables in any case. Each cable shall be not less than one-half inch in diameter, shall be attached to the top of the curtain, and shall pass over a not less than twenty inch diameter heavy pattern sheave and over a not less than twenty-four inch diameter heavy pattern head block to the counterweights. The grooves of all sheaves and head blocks shall be machine turned. The sheaves and head blocks shall be mounted on channels, made continuous and parallel to the proscenium wall, on which no fireproofing shall be required. The channels shall rest on substantial non-combustible supports on which no fireproofing shall be required.

53-151. Such type of curtain shall be balanced by counterweights only to such an extent as provided under section 53-152. The counterweights, counterweight guides, and counterweight hoistway guard for this type of rigging shall be the same as is required under section 53-148 for a drum type curtain; provided, however, that where six cables or less are required for suspending a sheave-type curtain, there may be but one set of counterweights, and all of the cables shall lead thereto; and provided further that where more than six cables are required for suspending a sheave-type curtain, there shall be two sets of counterweights, and half of the cables shall lead to one set of counterweights and half to the other.

53-152. The opening of any curtain shall be either by hand or by hydraulic or electric power machinery. Closing for emergency or automatic operation shall be the same as for normal operation, and shall be by gravity obtained by underbalancing the curtain with reference to the counterweights by not less than one pound per square foot of curtain; provided, however, that when the curtain is equipped with sliding shoes of the anti-friction type and smooth, lubricated guides, the underbalancing with reference to the counterweights may be not less than six-tenths pounds per square foot of curtain; and provided further that when the curtain is equipped with wheeled trolleys, the underbalancing with reference to the counterweights may be not less than two-tenths pounds per square foot of curtain. The counterweights shall be adjusted to overcome the frictional resistance resulting from the type of mounting used and to obtain the required closing speed, but the aforesaid underbalances shall not be lightened in any case.

53-153. The machinery, apparatus, and equipment for operating the curtain shall be of simple design, suitable for the purpose employed and positive in operation. The raising and lowering machinery, apparatus, and equipment shall be designed in accordance with rules and practices at least equal to the rules and practices recommended by the American Standards Association for the construction and operation of passenger elevator machinery, apparatus, and equipment, which are applicable to such curtain machinery, apparatus, and equipment and not in conflict with the building provisions of this code, set forth in the American Standard Safety Code for Elevators, Dumbwaiters, and Escalators, dated July, 1931. Proper provisions shall be made for top overtravel of the curtain, the length of which shall be not less than heretofore stipulated. There shall be provided upper terminal stopping devices, arranged to stop automatically the curtain from any speed attained in operation, within the overtravel, independently of the operating device or any other stopping device. All gears and worms shall be inclosed in self-lubricating housings.

53-154. For hydraulic machinery used for the raising of the curtain, the water supply shall be taken from the house tank, from another elevated tank, or from a suitable accumulator. Subject to the provisions of other chapters in the building provisions of this code, such water supply may be taken from the water supply tank for a standard system of automatic sprinklers.

53-155. For electric machinery used for the raising of the curtain, the current supply shall be fused independently of the house supply. All parts of the electric power wiring and equipment shall be otherwise made and installed in conformity with the electrical provisions of this code.

53-156. The opening of the curtain shall be controlled from the stage electrician's station, which shall be located at either side of the stage.

53-157. The curtain shall be equipped with a mechanical device which when operated manually or automatically, shall so function as to cause the curtain to close. The use of an electrical device for such purpose shall not be permitted. Such curtain closing device shall be so made, arranged, and equipped that it can be operated manually and instantly from three points as follows:

(1) Normally, from the stage electrician's station.

(2) In an emergency, from the stage fireman's station located at the opposite side of the stage from the stage electrician's station.

(3) In an emergency, from a point on the stage not more than five feet from an outside exit doorway. Such curtain closing device shall also be so made, arranged, and equipped, that, in case of fire, it shall be operated automatically and instantly as follows: Near the ceiling of the stage, a cord attached to suitable thermostatic devices shall be suspended, and the burning of the cord, or the actuating of any of the thermostatic devices, shall in any case operate the closing device of the curtain. Such cord shall, for the

purposes of the building provision of this code, be designated as "the curtain safety cord," and shall be a tarred, hempen cord, located above the gridiron, extended across the entire width of the stage running parallel with the curtain, and passing beneath the stage vent or each such vent as its center. Such thermostatic devices shall be actuated as the result of a difference in the rate of rise in temperature, rather than as a result of an increase in temperature. If there is but one stage vent, there shall be one such thermostatic device located under such vent at its center, and one such thermostatic device located on each side of the stage vent at points half way between the sides of the stage and the stage vent, in such case there being in all not less than three such thermostatic devices. If there is more than one stage vent, there shall be one such thermostatic device located under each such vent at its center, and at least two other such thermostatic devices, each of which shall be located on different sides of the stage at points halfway between the side of the stage and a stage vent, in such case there being in all at least two more such thermostatic devices than there are stage vents. At each of the three points from which the curtain closing device is required to be manually operative, there shall be a conspicuous non-combustible sign on which plain directions as to how to lower the curtain shall be given in letters at least four inches high. Such lettering shall be in white on a black field.

53-158. For a curtain for which hand power or electric power raising machinery is employed, there shall be provided for each set of counterweights, one liquid dash pot, having a smooth bored cylinder fitted with plunger and rod, with not less than a sixteen inch sheave on top of the rod and necessary cable, or an equivalent automatic device for checking the lowering of the curtain and to cause it to settle on the stage floor without shock. Such checking device shall be located within the inclosure formed by the guard required for the hoistway of the curtain counterweights. For a curtain for which hydraulic power raising machinery is employed, there shall be provisions made for automatically checking the lowering of the curtain and to cause it to settle on the stage floor without shock, which may be accomplished through the lifting machinery, or by such a checking device as before described.

53-159. No building hereafter designed, erected, altered, converted, or used for the purpose of a theater, having a type 2 stage shall be opened to the public for any picture display or theatrical performance, or for any other purpose, unless and until such curtain and all of its machinery, apparatus, equipment, and appurtenances have been subjected to and have satisfactorily passed initially the operating tests prescribed in section 53-160 and have been made to comply fully with the building provisions of this code. When such curtain and all of its machinery, apparatus, equipment, and appurtenances have passed said initial operating tests and have been found by examination to comply fully with the building provisions of this code, approval of the installation shall be given by the commissioner of buildings; and a certificate of inspection to that effect shall be caused to be issued to the owner, manager, or other person in control of the theater by said commissioner. Such certificate shall be posted under glass in a conspicuous place on the stage. Such certificate shall expire six months from the date of issuance thereof, and it shall be unlawful to operate initially any such theater within the city without such certificate or for more than ten days after the expiration thereof. If such curtain and all of its machinery, apparatus, equipment, and appurtenances have not passed the said initial operating tests, or have been found not to comply fully with the buildings provisions of this code, no such certificate shall be issued, and no such approval shall be given by the said commissioner, and he shall advise the architect, owner, manager, or other person in control of the theater, in writing, of the reasons for his action.

53-160. Upon completion of the installation, the curtain and all of its machinery, apparatus, equipment, and appurtenances shall pass a test by the department of buildings, which test shall demonstrate that each of the devices for operation and control required under this chapter are properly operative. Such tests shall be made by the department of buildings not more than one week preceding the time set for the initial opening of the theater to the public. Should the curtain, or any part of its machinery, apparatus or equipment, when tested as aforesaid, fail properly to operate within the true meaning and intent of the building provisions of this code, the cause of such failure shall be removed by the owner, manager, or other person in control of the theater, and the required operating tests shall be repeated by the department until operation of the curtain is found to comply fully with the building provisions of this code.

Equipment

53-161. Every motion picture projector in which nitrocellulose film or other flammable film is used, together with any electrical device and any other device accessory to the operation or repair of such projector, shall be located within a projection block, meeting the requirements of section 53-20, and every such projector shall be contained within a projection room in such block meeting the requirements of section 53-33. Every motion picture projector provided in any theater shall, except for purposes of replacement or repair, be permanently fastened in place. No projection room or projection block shall be required for any motion picture projector in which acetate cellulose film or other slow-burning or non-flammable film is used.

53-162. All shelving, furniture, and fixtures located in any projection block shall be of metal or other non-combustible material.

53-163. Provision for the storage of the permitted amount of flammable film shall be made in metal containers located within the projection block and meeting the requirements of chapter 155 of this code.

53-164. No projection room or projection block shall be required for any still picture projector, spotlight, or other light projection device in which acetate cellulose film, or other slow-burning or non-flammable film, or glass mounted slides are used.

53-165. No cooling equipment, refrigerating equipment, ice making machinery or equipment, or other equipment, machinery, or piping, for or in which any toxic, irritant, corrosive, flammable, or explosive gas is used as the refrigerant or cooling medium, shall be installed in any part of any theater; excepting such small units as permitted under section 53-21.

53-166. Every electrical transformer or capacitor containing oil, installed in any building hereafter designed, erected, altered, or converted for the purposes of a theater, and the enclosure therefor, shall conform to the requirements of chapter 61 of this code dealing therewith; provided, however, that no such room shall be located directly under or within twenty feet laterally of the auditorium in any theater, but such a room shall be permitted elsewhere in any theater. No doorway to any such room shall be located in the auditorium, or in any foyer, or lobby, or in any corridor, or passage directly connected with the auditorium.

53-167. The number of plumbing fixtures which shall be provided in any theater shall meet the requirements of this chapter; provided, however, that an additional number of plumbing fixtures shall be provided in auxiliary toilet rooms as required under section 53-36.

53-168. At least one water closet for males and at least one water closet for females shall be provided for each three hundred persons, or fraction thereof, comprising the capacity of the auditorium in every theater; provided, however, that urinals may be substituted for water closets for males to the extent of not more than sixty per cent of the number of such water closets required. There shall be at least one lavatory in every public toilet room.

53-169. *Projection rooms.* In the toilet room required in connection with every type 1 projection room, there shall be at least one water closet and at least one lavatory.

Stage dressing rooms. In the toilet room for males, required in connection with every dressing room section, there shall be at least one water closet provided for each fifty males, or fraction thereof; provided, however, that urinals may be substituted for water closets to the extent of not more than fifty per cent of the number of water closets required. In the toilet room for females required in connection with every dressing room section, there shall be at least one water closet provided for each fifty females, or fraction thereof. In every such toilet room for males and for females there shall be at least one lavatory, unless there is a lavatory provided in every dressing room.

Other parts of theaters. For employes, other than those engaged in the projection room and those using stage dressing rooms, at least one water closet for males and at least one water closet for females shall be provided for each fifty such employes, or fraction thereof; provided, however, that urinals may be substituted for water closets for males to the extent of not more than fifty per cent of the number of such water closets required. In every toilet room for employes, there shall be at least one lavatory.

53-170. Where the number of employes, other than those engaged in the projection block, stage block, and dressing room sections, will be twenty or less, the requirements of the last paragraph of the preceding section shall not apply, and no toilet equipment shall be required for this number of such employes; provided, however, that such employes shall have access to the toilets for the public.

53-171. In every theater there shall be a drinking fountain installed in such location that any person in the auditorium may, without traveling more than one hundred fifty feet horizontally, have access to a drinking fountain located on the same level as such person is seated or on not more than one floor above or below such level. No drinking fountain shall be installed in any toilet room.

53-172. Permanent and temporary furniture, fixtures, and other equipment, not otherwise provided for, scenery, draperies, hangings, and other decorations used in front of the proscenium wall in the auditorium, or elsewhere than on the stage in any theater, shall be made to conform with the applicable provisions in chapter 90 of this code. Accoustical treatment used in such parts of any theater shall also meet the provisions of chapter 61 of this code.

53-173. Every locker used for the storage of wearing apparel in any theater shall be entirely of non-combustible material.

Fire Protection

53-174. Every type 2 stage block in any theater shall be equipped throughout with a standard system of automatic sprinklers meeting the provisions of chapter 91 of this code. On every such stage there shall be standard sprinkler heads beneath each fly gallery and beneath the stage ceiling or roof; but no sprinkler head shall be installed in or beneath any stage vent. Any basement under the stage, every stage workshop, every storage room, every property room, every other room or space which is appurtenant to the stage, and in which combustible material is handled or stored, and every dressing room section which is located within the stage block, including every interior vertical means of exit and every horizontal exit connection for every such section, room, or space, shall also be equipped throughout with a standard system of automatic sprinklers.

Wherever any drape, any hanging, or any other decoration of combustible material is used or provided for above or alongside of the proscenium opening in the auditorium of any theater, there shall be provided in the auditorium immediately over the proscenium opening a sufficient number of automatic sprinkler heads spaced not more than six feet apart and attached to a standard system of automatic sprinklers, so as properly to safeguard such drape, hanging, or other decoration, irrespective of the fire-retarding treatment thereof.

53-175. A standard inside standpipe system shall be installed in the stage block of every theater hereafter erected, except a theater having a type 1 stage. Such standard inside standpipe system shall conform with the provisions of chapter 92 of this code; provided, however, that no two and one-half inch hose connection shall be required; provided further that location of the standpipe risers and the connections on them within a stairway inclosure shall not be required; and provided also as otherwise required under this section.

When not contained within the stage block, every entire dressing room section, any basement under the stage, every stage workshop, every storage room, every property room, every other room or space which is appurtenant to the stage and in which combustible material is handled or stored, and every other basement room or space which is connected with a basement under the stage shall be served by such system of standpipe fire lines.

The standpipe risers shall be not less than two inches in diameter; provided, however, that in lieu of such a riser any hose connection may be made direct to any riser of the required sprinkler system through a proper valve. Such system of standpipe fire lines shall have standard semi-automatic hose racks with one and one-half inch hose, so located on each level of the stage block, except the gridiron level, that every part of any such level may be reached by hose of the maximum length permissible. There shall be at least two such hose racks and hose in any basement under the stage, at least two such hose racks and hose on the stage floor level, and at least one such hose rack and hose on each fly gallery, if any. On each of said levels, except any fly gallery level, one of the required hose racks and hose shall be located on each side of the proscenium opening at any point between the side of such opening and the side of the stage.

53-176. (a) *Intercommunicating systems.* There shall be installed and maintained in every theater, an intercommunicating system of telephones with stations on each floor of public space, on each side of the stage, in the engine room and boiler room, in the manager's office and in the projection room.

(b) *City fire alarm box.* A city fire alarm box shall be located within a distance of one hundred feet from the principal entrance of every theater. New installations of city fire alarm boxes, necessary to meet this requirement shall be at the expense of the owner of the property affected.

53-177. Standard fire extinguishers, as described in chapter 90 of this code, fire axes, and pike poles shall be installed in every theater as follows:

In every theater there shall be on each side of the stage, and on each gallery above the stage level and on the gridiron at least one fire axe, one pike pole and one standard fire extinguisher. In the motion picture room, in the space underneath the stage, if accessible, in the engine room, in the boiler room and in the attic above the ceiling of the auditorium, there shall be at least one fire axe and one standard fire extinguisher.

Artificial Illumination

53-178. No red light shall be installed or used anywhere in any building hereafter designed, erected, altered, or converted for the purposes of a theater, or for more than one year after July 13, 1938, which is designed, arranged, maintained, or used for the purposes of a theater; unless, first, it be in connection with a required sign for which a red light is called for by this code; or unless, second, it be in connection with a non-required sign of the same character as a required type; or unless, third, it be in connection with a non-required directional sign of different character than the required type; or unless, fourth, it be used on the screen in connection with a picture display; unless, fifth, it be used on the stage in connection with the theatrical act or performance; or unless, sixth, it be in such location and so arranged and maintained that it cannot be mistaken for an exit light or an exit sign as defined under those sections of this chapter dealing with exit signs.

53-179. In every theater, every vertical means of exit, every horizontal exit connection, and every exit court, also every passage, passageway, or alley leading from an exit court or from an outside exit doorway, shall be illuminated to facilitate egress, in accordance with the provisions of this chapter. Every foyer, lobby, corridor, passage, passageway, aisle, or other such interior space for use of the public, or for common use of employes, and which is appurtenant to any vertical means of exit, or which is appurtenant to any horizontal exit connection shall likewise be illuminated. Such illumination for every public exit shall be provided for continuous use during the entire time that the theater is open to the public and until the theater has been entirely vacated by the public; provided, however, that such exterior illumination as is required need not be provided to operate before sunset. Electric lighting shall be employed at such places within every such aforesaid exit and appurtenant space to maintain the illumination at least to the full intensities hereinafter required. Every such lighting system shall comply with the electrical provisions of this code.

53-180. For every emergency exit from the auditorium and for every exit court there shall be provided a separate system of emergency exit lighting arranged to assure continued illumination in cases of emergency caused by the failure of the principal lighting of the building. Every such emergency lighting system shall be a thirty-two volt or a sixty-four volt electric lighting system, meeting the requirements of that part of chapter 88 dealing with electric exit signs and emergency lighting systems. Such emergency exit lighting system shall be of sufficient capacity to maintain the required illumination of exit signs continuously during the time required under section 53-186 under normal conditions and in any emergency, and shall be arranged to assume automatically, in the case of failure of the principal lighting source, the illumination of every emergency exit from the auditorium and for every exit court, and to maintain such illumination for a period of not less than thirty minutes in any emergency. It shall be optional with the owner to supply the additional illumination, called for in section 53-183, from this generator battery set in lieu of a separate connection with the principal source of current. The lamp sockets used in connection with every such emergency exit lighting system shall be of the standard intermediate base type to render difficult the substitution of standard medium base type lamps therein. No lamp socket in connection with any such emergency exit lighting system shall be used in combination with a lamp socket of any other lighting system in any lighting fixture, or elsewhere.

Minimum Intensities of Illumination

53-181. Every stairway, ramp, fire escape, corridor, passage, passageway, or other such space serving as a required means of public normal exit, or as a means of public emergency exit, from any theater shall be provided with a system of lighting which shall produce intensities of illumination of not less than one foot-candle on the floor at every stair landing and platform, ramp landing and platform, fire escape landing and platform, corridor angle and intersection, passage or passageway angle and intersection, inside exit doorway leading from any such space in the direction of exit, outside exit doorway, doorway giving access to a fire escape, and like principal points in any other such exit space. Such system of lighting shall also produce intensities of illumination not less than five-tenths of a foot-candle at every other point on the floor of such stairway, ramp, fire escape, corridor, passage, passageway, or other such exit space. Every foyer and lobby, every aisle on the main floor, any mezzanine, or any balcony of the auditorium and every step in any such aisle or elsewhere in the auditorium, in any theater, shall be provided with a system of lighting which shall produce intensities of illumination of not less than one foot-candle on the floor or tread over its entire area. Every exit court, every passage or passageway leading away from such a court or from an outside exit doorway, and every alley or other space leading away from such a court, passage, passageway, or doorway shall be provided with a system of lighting which shall produce intensities of illumination of not less than two hundredths of a foot-candle on the pavement for a distance of at least fifty feet from every outside exit doorway in such court, passage, passageway, alley, or space.

53-182. Every stairway, ramp, fire escape, corridor, passage, passageway, or other such space serving as a required means of employes' normal exit, or as such a means of employes' emergency exit, from any theater shall be provided with a system of lighting which shall produce intensities of illumination of not less than five-tenths of a foot-candle on the floor at every stair landing and platform, ramp landing and platform, fire escape landing and platform, corridor angle and intersection, inside exit doorway leading from any such space in the direction of exit, outside exit doorway, doorway giving access to a fire escape, and like principal points in any other such exit space; and such system of lighting shall also produce intensities of illumination of not less than two-tenths of a foot-candle at every other point on the floor of such stairway, ramp, fire escape, corridor, passage, passageway, or other such exit space.

53-183. Every non-required stairway, ramp, or fire escape in any theater, which by reason of its location and arrangement is in fact a means of exit or part of a means of exit to any way of departure from the theater, or to any exit court, either for the public or solely for employes, shall be lighted in the same manner and to the same intensities as is prescribed for such respective required exits under sections 53-179 and 53-180.

53-184. In any auditorium where still pictures, motion pictures, or other projections are made by means of directed light, the illumination on the floor of every aisle and at every exit doorway may be reduced to intensities of not less than one-fifth of those required under section 53-179. In any auditorium where any theatrical act or performance for which reduced illumination is necessary is presented, the said floor illumination may be likewise reduced. In other parts of every theater the full intensity of illumination shall be as prescribed under said section 53-179.

53-185. Additional illumination of intensity equal to one-fifth of that required by section 53-179 shall be provided in all normal exit connections, which shall be supplied from the general lighting source, but controlled separately from the required lights and connected with such source ahead or outside of the main circuit breaker which controls the required general lighting circuits.

53-186. An emergency exit lighting system shall produce intensities of illumination not less than one-fifth of what is required under that part of this chapter dealing with minimum intensities of illumination on the floor at the principal points and at every other point on the floor of the exits described in said sections.

Exit Signs

53-187. Signs shall be provided in every building hereafter designed, erected, altered, converted, or used for the purposes of a theater to mark the way of egress, in conformity with the requirements of the following sections of this chapter dealing therewith. Such signs shall be of three kinds, designated for the purposes of the building provisions of this code as "Standard Exit Signs," "Standard Directional Signs" and "Standard Fire Escape Signs." Every exit sign, directional sign, and fire escape sign on any building hereafter erected, altered, converted, or used for the purposes of a theater shall be made to conform with the provisions of chapter 66 of this code.

53-188. Every standard exit sign, standard directional sign, and standard fire escape sign shall be suitably illuminated by an electric source giving an intensity of not less than five foot-candles on the illuminated surface. Such illumination shall be from lights supplied from circuits of the wiring system for the emergency exit lighting required in exits under section 53-178 but controlled separately from such lighting. Such illumination of signs for every public exit shall be provided continuously during the entire time the theater is open to the public and until the theater has been entirely vacated by the public.

53-189. Standard internally illuminated exit signs shall be located at every doorway through which it is necessary to pass along any route of normal or emergency egress from any seat in the auditorium, or from any room or space for the use or accommodation of the public; provided, however, that no exit sign shall be required for any opening having no door or other closure therefor through which it is necessary to pass along any route of normal or emergency egress from any seat in the auditorium, if a standard exit sign or a standard directional sign is so located that it will be visible through such opening from the approach to the opening at a distance of twenty-five feet or more from the opening; and provided further, that not more than one exit sign shall be required for a group of doorways, if the distance between any two adjacent doorways in the group is not more than ten inches, measured horizontally between the nearest jambs, and if all the doorways in the group are so located that they will be visible from the approach to the sign at a distance of twenty-five feet, or more, from the sign.

53-190. Standard internally illuminated exit signs shall be located at every doorway through which it is necessary to pass along any route of egress from any room or space for the sole use of employes; provided, however, that no exit sign shall be required at any doorway leading from any such room or space directly into a corridor, passage, or other horizontal exit connection, if a standard exit sign or a standard directional sign is so located in the corridor, passage, or other horizontal exit connection that it will be visible from a point therein opposite the doorway; and provided further, that no exit sign shall be required for any doorway for which a standard fire escape sign is required.

53-191. Standard internally illuminated exit signs shall be located in every exit court at any doorway or entrance to a passage leading from such a court in the direction of egress.

53-192. Standard fire escape signs shall be located at every doorway giving direct access to any fire escape, except a stairway fire escape serving as a required vertical means of public emergency exit.

Standard Directional Signs

53-193. Standard directional signs shall be located in every foyer, lobby, corridor, and passage for the use or accommodation of the public at every change in the direction of egress; provided, however, that no directional sign shall be required at any such point, if at such point a standard exit sign is visible in the direction of egress; provided further that no directional sign shall be required at any such point in any corridor or passage, if beyond such point in the direction of egress there is no way out of the corridor or passage except through an exit; and provided also, that no directional sign shall be required at any such point in any vomitory.

53-194. Standard directional signs shall be located at the point of entrance in the direction of egress to every stairway or ramp for public use, where no doorway occurs at such point; provided, however, that no directional sign shall be required at the head of any stairway or ramp in a vomitory.

53-195. Standard directional signs shall be located in every exit court and in any passage leading from such court where, because of any intersection, interception, change in direction, or other peculiarity of arrangement, it is reasonably necessary to indicate the proper direction of egress.

Violation of Chapter Provisions

53-196. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 54

OPEN AIR ASSEMBLY UNITS

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54-1. The term "open air" as applied to an assembly unit shall mean the structure, group of structures, or part of a structure in or upon which persons assemble to view or to hear an act, speech, contest, performance, display, or event, and which is open to the air on one or more sides for a horizontal distance equal to not less than thirty-three and one-third per cent of its perimeter, and for a height of not less than eight feet in each seating level or story, except as hereinafter provided for stages.

54-2. Every structure, or part of a structure, hereafter designed, erected, altered, or converted for the purposes of an open air assembly unit, as defined in section 40-15, shall comply with the general provisions of this code pertaining to buildings, and in addition thereto shall comply with the special provisions set forth in this chapter.

Any building or structure or part of a building or structure included in an open air assembly unit, or as part of an open air assembly unit, that houses or encloses both the persons assembled to view or to hear an act, speech, contest, performance, display, or event, together with the said act, speech, contest, performance, display, or event, shall comply with all the requirements of chapter 55 on "Public Assembly Units" or chapters 53 on "Theaters," as the case may be, or as such occupation may be classified therewith.

54-3. An open air assembly unit shall, for the purposes of the building provisions of this code, include, among others, structures for such occupancies as:

Amusement parks,
Athletic fields,
Automobile speedways,
Aviation fields,
Band stands,
Baseball parks,
Beach enclosures,
Bleachers,
Bowls,
Concession booths,
Grand stands,
Observation platforms,
Race tracks,
Reviewing stands,
Stadiums,
Swimming pools,
Tents for circuses or public meetings.

Together with such other buildings and occupancies as are necessary to the operation of open air assembly units.

54-4. The capacity of an open air assembly unit and every part thereof shall be the number of fixed seats for spectators plus an allowance of one person for each five square feet of floor or ground area designed or used as standing space or for portable seats for spectators. The number of fixed seats shall be computed in accordance with the provisions of section 54-64. Floor area of stairways, ramps, aisles, passages, or spaces used for access or circulation shall not be considered in computing the capacity of an open air assembly unit, and shall not be used for portable seats or for standing room.

Where the space occupied by spectators is divided into separate units, such as grand stands or bleachers on opposite sides of a field, or grand stands or bleachers located side by side but not connected by common means of entrance or exit, the capacity of each such separate unit or space shall be computed in the same manner as in the preceding paragraph of this section.

Lot Occupancy and Court Requirements

54-5. Every open air assembly unit shall have frontages upon one or more open spaces consisting of streets, public alleys not less than ten feet wide leading to a street, or courts or other open spaces not less than ten feet wide which lead directly to a street or to a public alley leading to a street, and according to capacity as follows:

Capacity	Frontages
800 persons or less	1 street
More than 800 and not more than 2500 persons	1 street and 1 other open space
More than 2500 and not more than 5000 persons	2 streets or 1 street and 2 other open spaces
More than 5000 and not more than 10,000 persons	2 streets and 1 other open space
More than 10,000 persons	1 street or 1 open space on every side but at least 2 frontages shall be upon streets. One and only one fireproof passageway built as required by chapter 53 for exit courts for theaters, but at least ten feet wide may be used in place of one required open space other than a street.

54-6. Any permit issued for the construction or erection of a temporary open air assembly unit shall not entitle its holder to use such temporary open air assembly unit for any period exceeding fourteen consecutive days.

54-7. Any permanent open air assembly unit of wood frame construction more than eight hundred square feet in area shall be located not less than sixty feet from any building or property dividing lot line, or the opposite side of any public way. Any temporary open air assembly unit of wood frame construction shall be located not less than thirty feet from any building, except as otherwise provided.

54-8. Any club house, garage, hangar, paddock, or stable which is part of an open air assembly unit shall be located not less than sixty feet from any grand stand or bleachers; provided, however, that connecting passageways may be erected as provided by section 54-16.

Construction

54-9. Any open air assembly unit structure for seating purposes only having a capacity of more than ten thousand persons, or more than one story in height, or having more than one tier of seats, shall be built of non-combustible materials throughout or of a type of construction superior to heavy timber construction.

Non-combustible structural members, supporting a roof only, and located more than twenty feet above the floor directly beneath, need not be fireproofed. The roof slabs, plates, or arches shall have a fire-resistive value of one hour. Metal columns, beams, girders, trusses, purlins, and other framing members need not be fireproofed when located not less than twenty feet from any inside lot line or any other structure. Roof purlins and roof sheathing may be as required for heavy timber construction when no part of the roof trusses or roof framing is less than ten feet above any floor surface, and such a structure need not have enclosing walls if located not less than twenty feet from any inside lot line. Where an enclosing wall as required for heavy timber construction or a superior type of construction is provided in any location twenty feet or less from an inside lot line, then metal members protected by such a wall need not be fireproofed.

54-10. Heavy timber construction or a superior type of construction shall be used for any such open air assembly unit not more than one tier of seats in height, having a capacity of more than five thousand persons, if outside the fire limits, or more than twenty-five hundred persons, if inside the fire limits, and not exceeding ten thousand persons; provided, however, that such a structure need not have enclosing walls if located not less than twenty feet from any lot line or any other structure.

54-11. Ordinary construction or a superior type of construction shall be used for any open air assembly unit for seating purposes only not more than one story or one tier in height, having a capacity of twenty-five hundred persons or less, if inside of the fire limits, or a capacity of more than twenty-five hundred persons but not exceeding five thousand persons, if outside the fire limits, provided, however, that such a structure need not have enclosing walls if located not less than twenty feet from any lot line, and if all columns and framing members under the seating floor are of the sizes required by the building provisions of this code for heavy timber construction; and provided further that any interior ceilings, partitions, or enclosing guards and fences beneath the seating level shall be protected by a covering or enclosure of non-combustible materials.

54-12. Wood frame construction may be used for any open air assembly unit for seating purposes having only a capacity of twenty-five hundred persons or less, if outside the fire limits, subject to the provisions of this code relating to frontage consents and to the provisions of the Chicago zoning ordinance.

54-13. Any structure or part of a structure designed, intended, or used for the seating of a group of fifty persons or less in the open air, but which is not a part of an open air assembly unit, shall meet the requirements of the building provisions of this code for wood frame construction.

54-14. Any observation tower in an open air assembly unit shall be used exclusively as an observation tower, and shall not be a part of any building or other structure. A roller coaster, scenic railway, water chute, spiral, circular, spherical, riding, sailing, sliding, or swinging mechanical device, which stands not less than thirty feet from any other structure at any point, may be built of unprotected metal, or a superior type of construction of any height; provided, however, that such a structure shall have non-combustible floors, and shall have exits as required by the provisions of this chapter.

54-15. Rooms or booths for the housing of motion picture projectors using nitrocellulose or equally hazardous films may be either the fixed or the portable type; but every such room or booth shall afford a complete enclosure of non-combustible material of not less than one hour fire-resistive construction, and every doorway to such a room or booth shall have a non-combustible door.

All the provisions of chapter 53 for projection rooms and projection blocks in theaters shall apply to projection rooms and booths in open air assembly units, except that a non-combustible door shall be permitted in lieu of the sixty minute fire-resistive door; no toilet room shall be required in a projection room, and exits may be as provided in this chapter.

54-16. Every dressing room, property room, storage room, workshop, or similar room, and every canopy or covered structure in an open air assembly unit shall conform to the requirements for the type of construction of the unit in which it is located or to which it is connected.

54-17. Every parking space for automobiles in any open air assembly unit shall be entirely outside of any structure except structures of semi-fireproof or fireproof construction, and shall be separated from such a structure and its exits by not less than two hour fire-resistive construction, without openings through such construction.

54-18. Any fence or enclosing wall of an open air assembly unit which is not a part of a structure shall comply with the provisions of chapter 58 of this code for billboards, signboards, and fences.

54-19. Every floor level, upper deck, balcony, ramp, or stairway, which is more than two feet above grade or ground level, or at any height above another open air floor occupied by the public shall have in all wall openings or open sides thereof a solid curb not less than four inches high and also a protective railing not less than three feet six inches above the floor, of solid non-combustible material, or in lieu thereof, a wire mesh enclosure with any openings therein one and one-half inches or less in any dimension, and of the strength required by the building provisions of this code. Every space occupied by the public adjoining any water or other vertical offset having a depth of more than three feet shall have a protective railing at each such offset not less than three feet high with openings not to exceed ten and one-half inches in one dimension and of the strength required by the building provisions of this code.

54-20. Any floor or seating space of an open air assembly unit which has openings therein exceeding one-half inch in any dimension and which is above another floor occupied by the public, shall have thereunder a protective guard of wire mesh or other non-combustible material with any openings therein one-half inch or less in any dimension.

54-21. Every elevator, observation tower, roller coaster, scenic railway, water chute, spiral, circular, spherical, riding, sailing, sliding, or swinging mechanical device or other amusement device shall be equipped with public safety appliances and protective handrails, guards, or inclosures of such character as shall be approved by the commissioner of buildings.

54-22. The clear height of any space for the use of spectators shall be not less than eight feet at any point.

54-23. Isolated platforms of combustible construction may be erected not more than six feet above the grade in any open air assembly unit, but the aggregate floor area of any such platform shall not exceed ten thousand square feet.

54-24. Every isolated stage block structure in a permanent open air assembly unit shall have enclosing walls of not less than two hour fire-resistive construction. Any trap space shall be included within such walls, and shall be separated from the assembly space and any space underneath the assembly space by a wall of not less than three hour fire-resistive construction. The stage floor may be entirely of wood construction, if the stage does not exceed one thousand square feet in area, or if there is no trap space; otherwise it shall be of not less than one hour fire-resistive construction, but may have a wood finish as provided by chapter 53 of this code for a stage in a theater.

54-25. Any stage in a permanent open air assembly unit shall conform to the requirements for a stage of like character and dimensions in a theater, except as provided in the four succeeding sections.

54-26. If a ceiling is used over a stage or stage block, such ceiling shall conform to the provisions of sections 53-30 and 53-31 for stages in a theater, unless the space in front of the stage opening is open to the sky for a distance of not less than sixty feet from the front of such stage shell or cover.

54-27. Any stage having a ceiling area of fifty per cent or less of its floor area, or any stage shell or cover having an open space in front of the stage opening as provided in section 54-26, shall not be required to have a stage vent.

54-28. A proscenium fire curtain shall be required only when the assembly seating space in front of such stage is enclosed by walls along more than fifty per cent of the perimeter of such assembly space; and if such space is less than fifty per cent enclosed, the openings shall be so arranged that not less than three sides shall have openings therein at the ground level for a height of not less than eight feet, and the openings in any one side shall not exceed twenty-five per cent of the perimeter of such space.

54-29. Any trap space for a stage in an open air assembly unit shall be governed by the provisions of chapter 53 of this code for such trap space in theaters.

54-30. Every permanent open air assembly unit shall be provided with separate toilet rooms for males and females, having entrance doors separated by a distance of not less than twenty feet. The horizontal distance necessary to be traveled by any spectator in reaching a toilet room for either sex shall not exceed four hundred feet in any case. In an open air assembly unit to which admission is charged, all required public toilet rooms shall be located inside the ticket gates. Where dressing rooms are provided for actors, athletes, or other performers, separate toilet rooms for males and females shall be provided at convenient locations and shall be designated as "Employes Toilet Rooms."

Multiple Use Buildings

54-31. Subject to the provisions of this chapter, an open air assembly unit may adjoin or be connected to a building with any other occupancy, except a garage of an area greater than one thousand square feet, except hazardous use occupancies, and except as otherwise provided in chapters 47 to 58, inclusive, of this code.

54-32. Any room, space, or structure joined to, or forming a part of, an open air assembly unit, but used for other purposes, shall meet the requirements for the occupancy which includes such other purposes. Any garage or parking space shall be separated from all other parts of the structure by not less than two hour fire-resistive construction without any doorway or other opening. Every open air assembly unit in multiple occupancy shall be separated from every other occupancy in the same structure by construction of the fire-resistive value required by section 61-65 of this code.

Means of Exit

54-33. Every room or space open to the public in an open air assembly unit shall have, in addition to the entrance thereto, not less than one exit arranged to permit passage through and from the room toward an outside doorway without returning to the place of entrance; provided, however, that any room or space without seating arrangements having a floor area of one thousand square feet or less may have a single exit doorway.

54-34. The means of exit required for every open air assembly unit shall be designated as either a normal exit, emergency exit, or employes' exit as hereinafter provided and as defined in chapter 55 of this code for such exits in public assembly units.

54-35. An assembly room in an open air assembly unit having a stage designed for or used with combustible scenery shall conform to the requirements of chapter 53 for theaters and for exits in theaters.

54-36. *Width based on capacity.* The width of all normal exit doorways, gateways, passages, stairways, and ramps in an open air assembly unit shall be computed on the basis of capacity determined in accordance with section 54-5. The width of normal exit doorways, corridors, passageways, and horizontal normal exit connections, other than aisles, shall be at a rate of not less than eight inches per one hundred persons served thereby. This minimum width shall be maintained throughout the structure by a cumulative increase toward the outside exit doorways or gateways, so that the width of exit at any point shall be not less than the total required width of exits served thereby. Any building which is a part of a group of open air assembly units but not joined thereto, and which is enclosed with walls, shall have normal exits therefrom as required for its class of occupancy, which shall be maintained toward the outside exit doorways or gateways; provided, however, that any building located as required by section 54-9 may have outside exits into any open space.

Minimum widths. Any doorway or gateway used as an exit or for any public purpose in an open air assembly unit shall be not less than three feet in clear width; any horizontal passage or ramp shall be not less than five feet in width; and any stairway or other vertical means of exit shall be not less than four feet in width, except as otherwise provided. Any balcony having a capacity of two hundred fifty persons or less may have a stairway or ramp leading thereto of a clear width of not less than three feet.

54-37. Every grand stand or other open air assembly unit having seating arrangements shall have normal exit doorways according to capacity as follows:

1000 persons or less	Not less than 2 exit doorways
More than 1000 and not more than 4000 persons	Not less than 3 exit doorways
More than 4000 persons	Not less than one additional exit doorway for every 4000 persons capacity or fraction thereof exceeding 4000.

In computing the seating capacity, the width of seats shall be as required by section 54-64.

54-38. In any seating space, the aisles shall be so spaced that there shall be not more than twenty seats in a row between adjacent aisles in a structure of wood frame or ordinary construction, nor more than thirty such seats in a structure of heavy timber or superior type of construction. The number of seats between any aisle and a railing or wall shall be not greater than one-half the allowable number of seats between aisles. The width of aisles at any point shall be computed at a rate of not less than seven inches per one hundred seats for which they provide exit, if such seats have backs; and shall be computed at a rate of not less than six inches per one hundred seats if such seats are without backs. Such aisles shall be not less than three feet wide, and shall be increased in width where necessary in the direction toward exits; provided, however, that any aisle having seats on one side only and any aisle leading to box seats may be not less than two feet six inches wide, but the minimum width shall conform to the rate required by this section. There shall be not more than twenty-four consecutive rows of seats between transverse aisles.

The rise of any bank of seats shall not exceed two feet.

54-39. Every roller coaster, scenic railway, or other riding, rolling, sailing, sliding, or swinging device shall have, in addition to the normal exits therefrom, a means of emergency exit from the main track or slide rails; and such means of exit shall be by doorways or stairways not less than two feet six inches in width, or by ladders to grade, with a runway to such ladder not less than one foot six inches wide. The construction of emergency exits required by this section shall be equivalent in fire-resistive value to the construction of required normal exits for such a structure.

Horizontal Normal Exit Connections

54-40. Any longitudinal aisle, passageway, corridor, foyer, or lobby which also serves as a way of ingress in an open air assembly unit, shall be defined as a horizontal normal exit connection, and in addition to other provisions of this chapter applying to such spaces, shall meet the requirements of the following sections of this chapter dealing therewith.

54-41. Wherever steps are used in a horizontal normal exit connection, such steps shall extend the full width of the exit connection, and shall conform to the requirements of chapter 64 of this code.

54-42. Wherever ramps are used in a horizontal normal exit connection, the pitch shall be not greater than one and three-fourths inches rise per foot of length.

54-43. There shall be no radiators, doors, or other obstructions to exit travel in a horizontal normal exit connection other than handrails having a projection of four inches or less.

54-44 Every horizontal normal exit connection shall lead to an inside exit doorway or gateway at each end thereof, or to an outside exit doorway or gateway or to a field or other open space leading to an exit gateway.

54-45. All normal exit doors shall open outward. Normal exit gateways may have sliding gates.

54-46. Any turnstiles or similar devices shall not be considered as a required means of exit.

Vertical Means of Normal Exit

54-47. Any stairway or ramp, or a vomitory with a stairway or ramp therein, which also serves as a way of ingress in an open air assembly unit, shall be considered as a vertical means of exit and in addition to other provisions in the building provisions of this code applying to such spaces shall meet the requirements of the following sections of this chapter dealing therewith.

54-48. The number of vertical means of normal exit shall be sufficient to meet the requirements for location, and the width thereof shall be as required by section 54-36 for width of normal exits.

54-49. Every required vertical means of normal exit shall lead to a horizontal normal connection on the main exit level, and shall be so arranged that the direction of exit travel of the flight nearest the main exit level shall be faced toward an outside normal exit doorway. Every two or more required vertical means of normal exit shall have two most remote means separated at the top thereof by a distance not less than the distance between the longitudinal aisles most remote from each other, as measured along the center line of exit travel toward such means of exit; and not more than fifty per cent of the aggregate required width of vertical means of normal exit shall be located at one such unit.

54-50. In a required stairway, any rise shall be not more than eight inches high, and any cut shall be not less than ten and one-half inches wide.

54-51. Any stairway in an open air assembly unit shall be of the type required by chapter 64 of this code.

54-52. Any flight of stairs or steps in a means of normal exit except steps in a longitudinal aisle shall have not less than three rises; and any flight shall not exceed eleven feet six inches in height without a landing or platform.

54-53. Any ramp or vomitory used as a vertical means of normal exit shall meet the requirements of chapter 64 of this code. Any ramp shall not exceed a rise of ten feet between level landings.

54-54. Any observation tower or amusement device, built as required by section 54-14, may have one or more stairways from the highest level to grade; provided, however, that if only one stairway is used, there shall be one other means of exit by elevator, other mechanical device, ramp, or track used in the ordinary operation of such structure; and provided further, that the stairway shall be not less than four feet wide of non-combustible material throughout and enclosed for its full height from tread to soffit with wire mesh of not less than number ten gauge, with openings two inches or less in any dimension; or in lieu thereof, a solid wall of non-combustible material with windows as required.

Outside Normal Exit Doorways

54-55. In every open air assembly unit there shall be not less than two doorways or gateways affording normal exit from the structure directly to a public way or open space as provided by section 54-6 for frontages. The number of required outside normal exit doorways shall be sufficient to meet the requirements of section 54-37 for number and location of normal exits.

54-56. The location of outside normal exit doorways or gateways in an open air assembly unit shall be as required by section 55-53 for such doorways in a public assembly unit.

Employes' Exits

54-57. Not less than one means of exit shall be provided for every room or space which is occupied by employes but is not regularly open to the public; and at least two means of exit shall be provided for every such room of space which adjoins a stage on which combustible scenery is used, or which is located within a stage block, or which is directly involved in the conduct or execution of any display, act, or performance in which combustible scenery is used. The length of any employes' exit shall not exceed three hundred feet measured on the most direct route of travel from said room or space to a point wholly outside the limits of the structure, except as otherwise provided for towers. The width of any employes' exit other than a dressing room or basement shall be not less than two feet six inches. Any employes' exit from a dressing room or from a basement space shall be not less than three feet wide.

54-58. No spiral or winding stairway shall be permitted for employes' use, except as especially provided by chapter 53 of this code for gridiron stairways in stage blocks.

54-59. Any observation tower, built as required by section 54-14 shall have, in addition to the normal exits provided by section 54-54, a means of employes' exit which, if a ladder, shall be not less than one foot six inches wide and enclosed within a shaft as required by section 54-54 for stairway enclosure, and if a stairway, shall be non-combustible and not less than two feet wide; provided, however, that such a means of employes' exit need not be enclosed except by railings, if the height above grade is fifty-five feet or less.

54-60. Any projection booth in a tower separated from any structure by a distance of not less than ten feet may have one ladder exit inclosed with non-combustible material to grade.

Windows and Ventilation

54-61. Every enclosed room in an open air assembly unit, having a smaller opening to the outer air than that required by section 54-1, shall have windows or ventilation as required by chapter 81 of this code.

54-62. Every projection room for use with nitrocellulose film in an open air assembly unit, shall be ventilated as required by chapter 81 of this code, except as otherwise provided by section 54-15, and except as follows:

A projection room in an open air assembly space may be ventilated by a gravity ventilating system having an air outlet of not less than two hundred square inches in the ceiling above each projection machine, with a non-combustible duct of not less than two hundred square inches cross-section, extending to a height of at least twenty feet above any part of any floor, passage, or walk for the use of spectators. There shall be no damper or other air controlling device in such duct, unless it be counter-weighted and so arranged, that in case of fire, it will be released automatically and opened simultaneously with the shutter or shutters, required in the projection room enclosure for the operation of any light projection device.

Equipment

54-63. Seat spacings and the number of seats in a row shall conform to the provisions of section 54-38.

54-64. The minimum width of fixed seats in a row in which there are arms or other divisions between sittings, shall be one foot eight inches for eighty-five per cent of such seats and one foot seven inches for the remaining fifteen per cent, such width being measured in each case from center to center of arms or other divisions betwen sittings. For fixed seats without arms or other divisions between sittings, the minimum width of a sitting shall be computed at one foot six inches.

54-65. No portable seat or chair shall encroach on any space allotted to fixed seats, or which forms a part of any required means of exit. Every seat in an open air assembly unit shall be fastened securely in place with the following exceptions:

A box or loge may contain twenty or fewer portable seats or chairs; provided, however, that the floor area of such box or loge is equal to not less than five square feet for each such seat; and provided further that no portable seat or chair shall be permitted on any sloping floor having more than one inch pitch to the width of the seat tread.

Portable seats or chairs for spectators may be used on an exhibition or playing field which is overlooked by an open air assembly unit, if there are means of exit meeting the requirements of this chapter for such portable seats or chairs in addition to the width required for exits from fixed seats.

54-66. Any stage or platform in an open air assembly unit may be equipped with a combustible proscenium curtain of the draw, roll, or lift type, except as otherwise provided by section 54-28. Any proscenium fire curtain required by section 54-28 shall conform to the requirements of chapter 53 of this code for such fire curtain in theaters.

54-67. Water closets and urinals shall be provided in every permanent open air assembly unit according to capacity, as follows:

Type of occupancy	Water closets for women	Water closets for men	Urinals for men
Athletic fields Automobile speedways Aviation fields Baseball parks Race tracks	One for each 800 capacity or less	One for each 675 capacity or less	One for each 200 capacity or less
Athletic bowls and stadia	One for each 600 capacity or less	One for each 750 capacity or less	One for each 225 capacity or less
Amusement parks Band stands Dancing pavilions Open air theaters and all other open air units	One for each 400 capacity or less	One for each 1000 capacity or less	One for each 300 capacity or less

The term "capacity" in this section shall include all spaces provided for seating and standing room, as required by section 54-5. There shall be at least one lavatory in every toilet room. At least one water closet for males and at least one water closet for females shall be provided for each fifty or fraction of fifty actors, athletes, or other performers or employes; provided, however, that urinals may be substituted for water closets for males to the extent of not more than fifty per cent of the number of such water closets required.

54-68. Every permanent open air assembly unit shall be provided with public drinking fountains, which shall be so located that the horizontal distance necessary to be traveled by any spectator in reaching a fountain shall not exceed four hundred feet. The total number of public drinking fountains in any case shall be not less than one bubbler for each two thousand spectators, or fraction thereof. No drinking fountain shall be installed in any toilet room.

Fire Protection

54-69. Every isolated stage block which is designed for, or used with combustible scenery, and is not fully open to the sky, shall be equipped with a standard system of automatic sprinklers conforming with the provisions of chapter 91 of this code.

54-70. Standard fire extinguishers, as described in chapter 90 of this code, shall be installed in every open air assembly unit as follows:

One standard fire extinguisher for each four thousand square feet or less area of inclosed space below or adjacent to any such unit of non-combustible construction and one standard fire extinguisher for each four thousand square feet or less area open or inclosed spaces which are floored with, or supported by, combustible flooring or construction.

Exit Lighting and Signs

54-71. Every means of exit in an open air assembly unit, which is within a structure or within twenty feet of any structure, fence, doorway, or gateway, shall have a system of electric lighting as required by chapter 66 of this code for the normal illumination of exits.

54-72. In every open air assembly unit having an aggregate capacity of more than eight hundred persons, standard exit signs, standard directional signs, and standard fire escape signs, illuminated by electricity, shall be provided to mark the ways of egress, meeting the provisions of chapter 66 of this code; provided, however, that standard exit signs and standard directional signs shall be required only within or upon the structure.

Violation of Chapter Provisions

54-73. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit to to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 55

PUBLIC ASSEMBLY UNITS

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General Provisions

55-1. Every building, or part of a building, hereafter designed, erected, altered, or converted for the purposes of a public assembly unit, as defined in section 40-16, or a place of public assembly, shall comply with the general provisions of this code pertaining to buildings and also with the special provisions set forth in this chapter.

55-2. A public assembly unit shall include among others such occupancies as:

Aquariums
Armories
Art galleries
Athletic clubs or rooms
Auditoriums
Banquet rooms
Bath houses
Boards of trade
Broadcasting studios
Cafes
Cafeterias
Circuses
Community or field houses
Concert halls
Convention halls
Council chambers
Court rooms
Dance halls
Dining rooms
Exhibitions
Funeral homes
Gymnasiums
Game rooms
Lecture rooms
Legislative halls
Libraries
Lodges
Museums
Music halls
Natatoriums
Passenger stations
Planetariums
Reading rooms
Restaurants
Riding academies
Rinks
Roof gardens
Smoking rooms
Taverns
Trading rooms

except as provided for such occupancies as are otherwise classified under the building provisions of this code.

55-3. In addition to those definitions set forth in section 40-1, other terms used in this chapter are defined as follows:

Armory or rink. A building, or part of a building, with a floor designed, intended, or used as a drilling place, or as a place for skating on ice or roller skates, or as a place of playing curling, hockey, or similar games on such a floor.

Athletic club. A building, or part of a building, designed, intended or used for athletic or exercising purposes, or for the playing of athletic games; or for such occupancies as athletic clubs, billiard rooms, bowling alleys, exercise rooms, field houses, game rooms, gymnasiums, pool rooms, and turnvereins; except such occupancies as are herein embraced under other definitions.

Circus. A building, or part of a building, designed, intended, or used for the purposes of exhibition of live stock, or feats of horsemanship, or of performances of animals, or of animal races, or riding academies, with or without acrobatic displays in conjunction with such uses.

Dance hall. A building, or part of a building, designed, intended, or used as a place for dancing, including such occupancies as ballrooms, cabarets, casinos, roof gardens, or other places having entertainment and eating facilities, or either of them, for the audience or assemblage in conjunction with dancing.

Eating place. A building, or part of a building, designed, intended, or used for the purposes of serving food and drink, or either of them, to persons for consumption on the premises, including such occupancies as banquet rooms. cafes, cafeterias, dining rooms, grills, lunch rooms, restaurants, and taverns, except as embraced under other definitions.

Locker room. A room, or part of a building, designed, intended, or used for the purposes of storage in lockers of wearing apparel or other articles in use by persons, with or without provisions for dressing in conjunction with such lockers.

Museum or exhibition place. A building, or part of a building, designed, intended, or used as a repository for natural, scientific, or literary objects of interest, or works of art, industrial productions, other productions, specimens, or exhibits arranged for inspection or view, and including such occupancies as aquariums, exhibition buildings, expositions, fairs, galleries, museums, and planetariums.

Promenade. Any part of a building, designed, intended, or used as a place for walking for pleasure or exercise, including arcades, ambulatories, cloisters, colonnades, roof promenades, and gardens.

Smoking or waiting room. A building, or part of a building, designed, intended, or used for smoking and waiting purposes, or either of them, including passenger depot concourses.

Swimming bath. A building, or part of a building, designed, intended, or used for swimming purposes, including natatoriums and bath houses.

Trading room. A building, or part of a building, designed, intended, or used for the purchase, sale, or exchange of stocks or other securities for delivery on the premises or elsewhere; and for the purchase, sale, or exchange of grain or other articles of commerce from stock not located on the premises and for delivery elsewhere, including boards of trade, brokers' board rooms, stock exchanges and rooms having a grain pit or trading post.

55-4. The capacity of a public assembly unit and of its several parts and rooms shall be computed as required by chapter 62 of this code.

In computing the total capacity of the building, the following rooms or spaces shall not be included: entrance lobbies, foyers and corridors used for access and communication only, kitchens, boiler or furnace rooms, storage rooms, toilet rooms, coat rooms, private offices and similar rooms of an administrative or service use in which persons do not congregate; such portions of aquariums, aviaries, conservatories, exhibitions, stables, zoos, and similar spaces used for the care of animals or exhibits in public assembly units, but not open to the public; bus stations, train sheds, taxicab loading platforms or similar spaces which are open at grade on at least one side, or having an opening or openings without doors equivalent to at least twenty per cent of the perimeter of such space opening upon an open space at grade, and such spaces as may be classified under other occupancy chapters in the building provisions of this code; provided, however, that such excepted rooms and spaces shall have exits computed on the basis of their capacity as required by this chapter.

55-5. Every public assembly unit shall have frontage upon one or more open spaces consisting of streets, public alleys not less than ten feet wide leading to a street, or courts or other open spaces not less than ten feet wide which lead directly to a street or to a public alley leading to a street, and according to capacity as follows:

Capacity	Space
200 persons or less	1 street
More than 200 and not more than 800 persons	1 street and 1 other open space
More than 800 persons	1 street and 2 other open spaces

One and only one fireproof passageway, built as required by chapter 64 of this code for horizontal exit connections, may be used in place of one required open space other than a street.

55-6. Every court which is necessary to obtain windows or other openings for required natural lighting and ventilation shall be made to conform with the provisions of chapter 50 of this code.

Construction

55-7. Fireproof construction shall be used for every public assembly unit more than four stories in height, or more than fifty feet above grade in height to the highest floor level, and for every public assembly unit having an aggregate capacity of more than one thousand eight hundred persons, except as otherwise provided under this chapter.

Non-combustible structural members supporting a roof only, and located more than twenty feet above the floor directly beneath, need not be fireproofed. The roof slabs, plates, or arches shall have a fire-resistive value of one hour.

55-8. Semi-fireproof construction or a superior type of construction shall be used for every public assembly unit which is more than two stories in height, and which is not more than fifty feet above grade in height measured to the highest floor level, and for every public assembly unit having an aggregate capacity of more than eight hundred persons but not more than one thousand eight hundred persons, except as otherwise provided under this chapter.

55-9. Ordinary or heavy timber construction, or a superior type of construction shall be used for every public assembly unit not more than two stories in height and for every public assembly unit having an aggregate capacity of eight hundred persons or less, except as otherwise provided under this chapter.

55-10. Any building, or part of a building, designed, intended, or used as a public assembly unit for a group of ten persons or less, shall meet the requirements of the building provisions of this code for ordinary construction.

55-11. Any building, or part of a building, designed, intended, or used as a public assembly unit for a group of more than ten and not more than one hundred persons, shall meet the requirements of the building provisions of this code for schools, except as follows:

A public assembly unit which is also in an institutional building, theater, open air assembly unit, church, or school shall meet the requirements of the chapters in the building provisions of this code covering such occupancies.

A board of trade room, broker's board room, stock exchange, trading room, or other room having a grain pit or trading post therein shall meet the requirements of chapter 50 of this code for financial units.

55-12. In every public assembly unit of ordinary, heavy timber, or semi-fireproof construction more than one story and basement in height, and also every assembly room in a public assembly unit of not more than one story in height, the basement and the floor immediately above the basement, if any, shall be of three hour fire-resistive construction.

55-13. Any public assembly unit may have appended to it a one story or one story and basement structure, used only for assembly purposes, having a roof and its supporting members, including columns, unprotected with fire-resistive material; provided, however, that such structure shall comply in all respects with the requirements of chapter 61 of this code.

55-14. Every assembly room in a public assembly unit of ordinary construction shall be separated from every other part of the unit by partitions not less fire-resistive than wood studding with metal lath and plaster on both sides and by a floor of the character required for such construction, with a metal lath and plaster ceiling thereunder; and every assembly room in a public assembly unit of heavy timber construction shall be separated from every other part of the unit by partitions of one hour fire-resistive construction.

Size and Location of Rooms

55-15. For the purposes of this chapter, ceiling height shall be measured from the floor line of a level floor or from the highest point of a sloping floor to the lowest point of the ceiling; provided, however, that beams, girders, and ducts may project twelve inches below the required ceiling height.

The minimum height of any room in a public assembly unit shall be ten feet, except toilet rooms and spaces below or above a balcony, which shall have a minimum height of eight feet, and except storage rooms, closets, rooms for mechanical equipment, or similar service rooms, which shall have a minimum height of seven feet, and except assembly rooms or gymnasiums, or rooms having seating arrangements in a public assembly unit, which shall have a clear ceiling height of at least twelve feet; except that the clear height need not exceed eight feet either above or below a balcony for the audience.

55-16. The floor of an assembly room in any public assembly unit of fireproof construction may be at any height above grade, and shall be not more than fourteen feet below grade at any point.

55-17. The floor of an assembly room or gymnasium in a public assembly unit of other than fireproof construction shall be not more than fifteen feet above grade at any point, except as provided for balconies under section 55-18. The lowest point of the main floor of any assembly room or gymnasium thereon shall be not more than seven feet below grade.

55-18. There shall be no spectators' balcony in an assembly room or gymnasium of a public assembly unit of other than fireproof or semi-fireproof construction. In a public assembly unit of semi-fireproof construction there shall be no spectators' balcony located in whole or in part above any other spectators' balcony; provided, however, that gymnasiums, athletic or game rooms, having a combined total capacity on the balcony or balconies of not to exceed fifty persons shall be exempt from the provisions of this section.

55-19. An assembly room in a public assembly unit having a stage designed for or used with combustible scenery shall conform to the requirements of chapter 53 of this code.

55-20. All motion picture machines for use with nitrocellulose film in a public assembly unit shall be enclosed in a booth or booths as required by chapter 57 of this code.

55-21. Separate toilet rooms shall be provided for males and females in every public assembly unit, having entrance doors separated by a distance of not less than ten feet. The entrance door to every toilet room for the assemblage shall be plainly marked for males "MEN" and for females "WOMEN." [Amend. Coun. J. 4-3-40, p. 2273.]

55-22. No storage room or storage closet shall be located under any stairway in any public assembly unit of other than fireproof construction.

55-23. The floor of any room designed, intended, or used as a public skating rink by a group of more than twenty-five persons shall be located not more than two feet above grade or the main exit level, or not more than two feet below grade or the main exit level.

Multiple Use Buildings

55-24. Subject to the provisions of this chapter, a public assembly unit may be located in the same building with any other occupancy, except a hazardous use unit prohibited in a public assembly unit under section 51-66 of this code and except as otherwise provided in chapters 47 to 58, inclusive, of this code.

55-25. Every assembly room and gymnasium in the same building shall be separated from other assembly rooms or gymnasiums, and every public assembly unit in multiple occupancy shall be separated from every other occupancy in the same building by construction of standard fire separations of the fire-resistive value required in chapter 61 of this code.

55-26. The electric wiring system of every public assembly unit shall be separate and distinct from the electric wiring system for parts of a building used for other occupancy; provided, however, that current for the entire building may be taken through a common service connection if the main service and such systems are each equipped with an automatic circuit breaker, or with another automatic switching device which shall function likewise.

Means of Exit

55-27. Every room or space open to the public in a public assembly unit shall have, in addition to the entrance thereto, not less than one exit arranged to permit passage through and from the room toward an outside doorway without returning to the place of entrance; provided, however, that any proscenium box with twenty seats or less, or any room without seating arrangements having a floor area of one thousand square feet or less may have a single exit doorway.

55-28. The means of exit required for every public assembly unit shall be designated as either a normal exit, emergency exit, or employes' exit as hereinafter provided.

55-29. Any means of normal exit shall include either a horizontal normal exit connection, or a vertical means of normal exit, or an outside normal exit doorway as provided by this chapter, but shall not include any means of exit which is hereinafter defined as a sole emergency exit.

55-30. Any means of emergency exit shall include either a horizontal emergency exit connection, or a vertical means of emergency exit, or an outside emergency exit doorway as provided by this chapter.

55-31. Any means of employes' exit shall include either a normal or emergency exit which is available for the joint use of the public and employes or any normal or emergency exit which is provided for the sole use of employes.

55-32. An assembly room in a public assembly unit having a stage designed for or used with combustible scenery shall conform to the requirements of chapter 53 of this code for exits in theaters.

55-33. Every non-required stairway or other vertical means of exit in a public assembly unit, which is either for use of the public or employes, shall conform to the requirements of this chapter for similar required vertical means of exit.

Width of Normal Exits

55-34. The width of all normal exit doorways, passages, stairways, and ramps in a public assembly unit shall be computed on the basis of capacity determined in accordance with chapter 62 of this code. The width of normal exit doorways and corridors from any room other than an assembly room, gymnasium, or room having seating arrangements, as provided in section 55-36, shall be at a rate of not less than one foot six inches per one hundred persons capacity if on the first floor; and at a rate of not less than one foot ten inches per one hundred persons capacity if on any floor or balcony other than the first floor. This minimum width shall be maintained throughout the building by a cumulative increase toward the outside exit doorways, so that the exit at any point shall be equivalent to the total required width of exits from rooms served by such doorways; provided, however, that the total combined width of required stairways or ramps shall be computed according to the greatest capacity of any floor for which they serve as exits and need not be increased for additional floors served thereby, except as required by section 55-36 for rooms having seating arrangements.

55-35. Any doorway used as an exit or for any public purpose in a public assembly unit shall be not less than three feet in clear width, and any passage, stairway, or ramp serving as an exit shall be not less than four feet in clear width; provided, however, that a balcony having a capacity of two hundred fifty or less may have a stairway and passage leading thereto of a clear width of not less than three feet.

Normal Exits of Gymnasiums and Rooms Having Seating Arrangements

55-36. The width of doorways, passages, stairways, and ramps required for normal exits from such rooms shall be computed at a rate of not less than one foot six inches per one hundred persons capacity for all assembly rooms, gymnasiums, or other rooms having seating arrangements, and this minimum width shall be maintained by a cumulative increase through all stories toward the outside exit doors.

55-37. Every assembly room, gymnasium, or other room having seating arrangements, and every floor, balcony, or tier thereof, shall have normal exit doorways according to capacity as follows:

Capacity	Doorways
500 persons or less	Not less than two exit doorways
More than 500 persons and not more than 1000 persons	Not less than four exit doorways
More than 1000 persons	Not less than two additional exit doorways for every 1000 persons capacity or fraction thereof exceeding 1000.

Such required normal exit doorways shall be so located that the line of travel from any seat to a normal exit doorway shall be not greater than one hundred fifty feet, and if more than one hundred feet, such line of travel shall have not more than one angle or turn.

55-38. In any assembly room, gymnasium, or other room having seating arrangements in a public assembly unit of fireproof construction, the aisles shall be so spaced that there will be not more than twenty seats in a row between adjacent aisles, and not more than ten seats in a row between an aisle and a wall, if such seats are fixed seats and in a building of other than fireproof construction, or where seats are not fixed seats, there shall be not more than fourteen seats in a row between adjacent aisles and not more than seven seats in a row between an aisle and a wall. The width of the aisles at any point shall be computed at a rate of not less than one foot ten inches per one hundred persons served, but no aisle shall be less than three feet wide at any point.

55-39. In any assembly room, gymnasium, or other room having seating arrangements in a public assembly unit, in computing the seating capacity for seat boards without divisions between seats, each one foot six inches in length of seat boards shall be counted as one seat. Rows of seats with backs shall be not less than two feet ten inches apart measured from back to back, and rows of seats without backs shall be not less than two feet two inches apart measured horizontally between vertical planes through the rearmost edges of seats in successive rows.

55-40. In any assembly room, gymnasium, or other room having seating arrangements in a public assembly unit, the rise of any bank of seats shall not exceed one foot nine inches.

Horizontal Normal Exit Connections

55-41. Any longitudinal aisle, passageway, corridor, or any foyer or lobby which also serves as a way of ingress in a public assembly unit, shall be defined as a horizontal normal exit connection, and in addition to other provisions of this chapter applying to such spaces shall meet the following requirements of this chapter dealing therewith.

55-42. Wherever steps are used in a horizontal exit connection, they shall extend the full width of such aisle, passageway, or other space and the rise and cut of each step shall conform to the requirements of section 55-50 for stairways; and the location of any step shall be not nearer than the width of the horizontal exit connection from any end thereof or from any other stairway or exit doorway.

55-43. Wherever ramps are used in a horizontal exit connection, the pitch shall be not greater than one unit rise in five units horizontal, if in an aisle, and not greater than one rise in six horizontal if in any other horizontal exit connection.

55-44. Every horizontal exit connection shall lead to an inside exit doorway at each end unless there is an outside exit doorway at the end thereof; provided, however, that the end of any longitudinal aisle nearest the stage may lead to a transverse aisle leading to an emergency exit doorway.

55-45. All normal exit doors shall open outward or toward the direction of travel, and shall not project into any means of normal exit; provided, however, that normal exit doors may swing outward into any corridor or passageway which is more than seven feet in clear width, but such doors shall swing through an arc of not less than one hundred eighty degrees against the wall, and shall not obstruct the clear required width when in such an open position.

Vertical Means of Normal Exit

55-46. Any stairway or ramp, or a vomitory with a stairway or ramp therein, which also serves as a way of ingress in a public assembly unit, shall be considered as a vertical means of exit, and, in addition to other provisions in the building provisions of this code applying to such spaces, shall meet the following requirements of this chapter dealing therewith.

55-47. Every floor level or balcony, or space occupied by the public, shall have not less than two vertical means of normal exit, which shall be either stairways or ramps, as provided by chapter 64 of this code, or vomitories as required by section 55-52. The number of vertical means of normal exit required shall be sufficient to meet the requirements for location as given in section 55-49, and the combined width of such exit shall be as required by sections 55-34 to 55-36 for width of normal exits.

55-48. Every stairway or other required vertical means of normal exit shall start at the highest story or level occupied by the public or at the highest level in the part of the building in which it is located.

55-49. Every required vertical means of normal exit shall lead to a horizontal normal exit connection on the main exit floor level, and shall be so arranged that the direction of exit travel of the flight nearest the main exit floor shall be faced toward an outside normal exit doorway. Any two or more required vertical means of normal exit from a mezzanine or balcony in any assembly room shall have the two most remote means separated by a distance, measured along the center line of exit travel, of not less than one-half the distance between the center lines of the longitudinal aisles most remote from each other as measured along the perimeter of the mezzanine or balcony. The required vertical means of exit from any floor or balcony shall be so arranged that not more than seventy per cent of the aggregate required width of normal exits shall be located on any one side of a room having seating arrangements.

55-50. In a required stairway, any rise shall be not more than seven and one-half inches high, and any cut shall be not less than ten inches wide.

55-51. Any flight of stairs or steps in a means of normal exit, except steps in a longitudinal aisle, shall have not less than three rises; and any flight shall not exceed eleven feet six inches in height without a landing or platform.

55-52. Any vomitory used as a vertical means of normal exit, or in lieu of a required stairway, shall meet the requirements of the preceding sections of this chapter for required stairways and ramps with respect to number, width, location, inclosure, and construction. If any steps are used in such vomitory, there shall be not less than three steps in a flight, and if used in combination with a ramp, such flight of steps shall be separated from any ramp by a level landing not less than four feet long.

Outside Normal Exit Doorways

55-53. In every public assembly unit there shall be not less than two doorways affording normal exit from the building directly to a street, or to a public alley not less than ten feet wide leading to a street, to a court, or other open space not less than ten feet wide leading directly, or through a public alley not less than ten feet wide, to a street. If the capacity of the public assembly unit or of the building exceeds eight hundred persons, there shall be not less than three such doorways; or if the capacity exceeds two thousand persons and is not greater than five thousand persons, there shall be not less than four such doorways, and one additional outside normal exit doorway shall be required for each increase of two thousand persons capacity.

Width of Emergency Exits

55-54. Any room or story in a public assembly unit, having a capacity of more than two hundred fifty persons, shall have in addition to the normal exits required by this chapter, sole emergency exits as specified in the following sections of this chapter dealing therewith.

55-55. The width of all emergency exit doorways, passages, stairways, and ramps shall be computed on the basis of capacity determined in accordance with chapter 62 of this code. The width of emergency exit doorways, passages, stairways, ramps, or other means of emergency exit shall be computed at a rate not less than fifty per cent of the required width of normal exits. This minimum width shall be maintained throughout the building by a cumulative increase toward the outside exit doorways, so that the exit at any point shall be equivalent to the total required width of emergency exits; provided, however, that the total combined width of required emergency stairways or ramps for any public assembly unit other than assembly rooms or other rooms having seating arrangements, shall be computed according to the greatest capacity of any floor for which they serve as exits, and need not be increased for additional floors served thereby, except as required for rooms having seating arrangements.

55-56. Any required emergency exit shall be not less than the minimum width required by section 55-35 for any exit in a public assembly unit.

Emergency Exits of Gymnasiums and Rooms Having Seating Arrangements

55-57. All doorways, passages, stairways, and ramps affording emergency exit from any assembly room, gymnasium, or other room having seating arrangements shall meet the requirements of this chapter dealing with normal exits of gymnasiums and rooms having seating arrangements, except as provided in the following sections.

55-58. The width of emergency exits of assembly rooms, gymnasiums, or other rooms having seating arrangements shall be computed as required by section 55-55.

55-59. Every assembly room, gymnasium, or other room having seating arrangements, and every floor, balcony, or tier thereof, shall have emergency exit doorways according to capacity as follows:

Capacity	Doorways
More than 250 and not more than 600 persons	Not less than 1 emergency doorway
More than 600 persons	Not less than 2 emergency doorways; provided, however, that the number of emergency exit doorways shall be sufficient to meet the requirements for location.

55-60. Any required emergency exit doorway shall be so located that the horizontal line of travel from any seat to any emergency exit doorway shall be not greater than one hundred fifty feet. Any transverse aisle in an assembly room shall have at each end thereof an emergency exit doorway having a clear width at least equal to the required width of the transverse aisle. Any assembly room having a stage or platform shall have not less than two emergency exit doorways located on opposite sides of the assembly room and between the front of stage or platform and a point which is not more distant from the stage or platform than one-half the distance between the first and last rows of seats.

Horizontal Emergency Exit Connections

55-61. Any transverse aisle, passageway, corridor, foyer, lobby, or outside non-combustible platform, which does not serve as a way of ingress in a public assembly unit, shall be defined as a horizontal emergency exit connection, and in addition to other provisions of this chapter applying to such spaces, shall meet the requirements of the following sections of this chapter dealing therewith.

55-62. The provisions for steps, ramps, and obstructions in an emergency exit connection shall be as required by sections 55-42 and 55-43 for normal exit connections.

55-63. All emergency exit doors shall open outward as required by section 55-45 for normal exit doors.

55-64. A transverse aisle in a balcony and a transverse aisle at the rear of a main floor in a stadium type auditorium may serve both as a means of public normal exit and as a means of public emergency exit in which case application of the required widths of such means shall be coincidental and not cumulative.

Vertical Means of Emergency Exit

55-65. Any stairway or ramp which does not serve as a way of ingress in a public assembly unit may be considered as a vertical means of emergency exit. and in addition to other provisions in the building provisions of this code applying to such spaces, shall meet the requirements of the following sections of this chapter dealing therewith.

55-66. Every floor level, balcony, or other space which is above or below the main exit level, shall have vertical means of emergency exit which shall be sufficient in number and combined width to meet the requirements for all emergency exits leading to such stairway or ramp.

55-67. Every required vertical means of emergency exit shall be continuous from the story or level which it serves to the main exit level or grade.

55-68. Every required vertical means of emergency exit shall lead to a horizontal emergency exit connection or an outside emergency exit doorway, or to a court or other open space at grade, and shall be so arranged that the direction of exit travel of the flight nearest the main exit level shall be faced toward an outside emergency exit doorway or open space at grade. Any two or more required vertical means of emergency exit from a mezzanine or balcony in an assembly room shall have the two most remote means separated by a distance not less than the width of the assembly room, as measured along the front wall thereof; and not more than seventy per cent of the aggregate required width of emergency exits shall be located on any one side of a room having seating arrangements.

55-69. In a required emergency stairway, any rise shall be not more than seven and one-half inches high, and any cut shall be not less than ten inches wide.

55-70. Any flight of stairs or steps in a means of emergency exit shall have not less than three rises, and any flight shall not exceed eleven feet six inches in height without a landing or platform.

Outside Emergency Exit Doorways

55-71. In every public assembly unit required by this chapter to have emergency exits, there shall be not less than one outside doorway for each required means of emergency exit affording exit from the building directly to a street, or to a public alley not less than ten feet wide leading to a street, or to a court or other open space not less than ten feet wide leading directly, or through a public alley not less than ten feet wide, to a street.

55-72. In a public assembly unit having only one emergency exit doorway, such doorway shall be located on a side other than the side having the principal entrance to the building, and if two emergency exit doorways are required, the center lines of such doorways shall be separated by a distance not less than twenty per cent of the perimeter of the building measured on said perimeter; and if more than two emergency exit doorways are required, any two of such doorways shall be separated by a distance not less than fifteen per cent of the perimeter of the building; provided, however, that the combined width of all required normal and emergency exits opening into spaces other than streets, shall not exceed the combined width of such open spaces at any point of egress therefrom.

55-73. Every outside emergency exit doorway, where the means of exit is not a level floor, shall have a level landing at each side thereof not less than four feet long, and extending beyond the door jambs not less than one foot at each jamb unless confined by walls.

Employes' Exits

55-74. Every room or space in a public assembly unit, which is occupied by employes and not regularly open to the public, shall have not less than one means of employes' normal exit which may be any means of normal exit as required by that part of this chapter dealing with width of normal exits or a means of exit for the sole use of employes, or any combination of the two. Such means of exit shall be so located that the vertical means of exit or outside exit doorway shall be not more than one hundred feet from any point in the floor or story served thereby. Every means of employes' normal exit shall be not less than three feet wide. The construction of all such means of exit shall be as required by this chapter for horizontal normal exit connections, vertical means of normal exit, and outside normal exit doorways.

55-75. Every public assembly unit having a stage for combustible scenery, and every basement room occupied by employes shall have means of employes' emergency exit from every part thereof in addition to the employes' normal exit required by section 55-74 and such emergency exits shall be as required by chapter 53 of this code for such spaces in theaters.

Exit Doors

55-76. All exit doors for a public assembly unit shall, in addition to other provisions of this chapter, meet the requirements of the following sections of this chapter dealing therewith.

55-77. Every outside normal or emergency exit door shall be so arranged that it will not encroach upon a public way or other public space when opened.

55-78. All exit doors shall conform to the requirements for fire-resistive construction having the value of the required type of construction for the inclosing walls of the rooms or spaces from which such doors open; provided, however, that outside normal exit doors may be of wood.

55-79. Any lock, latch, or other fastening device on any required exit door shall be so made that when locked or fastened it may easily be opened by any person on the way out without a key or other opening device; and every outside normal and emergency exit door, except the doors of one principal entrance, shall be provided with standard panic hardware; provided, however, that exit doors for the sole use of employes are exempt from the provisions of this section.

Windows and Ventilation

55-80. Every required window in a public assembly unit shall face upon a public way, a public park, or a yard or court meeting the requirements of section 55-8.

55-81. Every room in a public assembly unit, other than a kitchen, assembly room, gymnasium, or other room having seating arrangements, and except entrance lobbies, corridors used for access and communication only, closets, and storage rooms, shall have either windows, or skylights, or both, with closures arranged to open so as to provide a total net area of openings for natural ventilation as required by chapter 81 of this code; or if such openings are not provided there shall be a system of mechanical ventilation which shall meet the requirements of chapter 81 of this code.

55-82. Every kitchen, assembly room, gymnasium, and other room having seating arrangements in a public assembly unit, shall have either natural ventilation or a system of mechanical ventilation as required by chapter 81 of this code.

55-83. Every projection room for use with nitrocellulose film in a public assembly unit shall be ventilated as required by chapter 81 of this code.

Equipment

55-84. The width of aisles, seat spacing, and spacing of rows for public assembly units having fixed seats shall be as required by sections 55-38 and 55-39.

55-85. Every seat on any floor of a public assembly unit which is not a level floor shall be a fixed seat, except as otherwise provided under this section. Portable seats may be used on any level floor, level balcony, or bank of seats of an assembly room, or other room, when fastened together side by side in groups of not less than five seats; provided, however, that not more than twenty portable chairs may be used in any box or other railed-in enclosure with a level floor and a proper aisle or other means of exit.

55-86. Every opening between a stage and an assembly room, gymnasium, or other room having seating arrangements in a public assembly unit, shall be equipped with a fire curtain, as required by chapter 53 of this code for a proscenium fire curtain in a theater; provided, however, that it shall be permissible to use a draw curtain for a stage or platform which is neither designed for nor used with combustible scenery.

55-87. The number and location of plumbing fixtures which shall be provided in any public assembly unit shall meet the requirements of chapter 53 for toilet equipment for theaters.

55-88. In every public assembly unit, drinking fountains shall be installed in such locations that any person may, without traveling more than one hundred fifty feet horizontally, have access to a drinking fountain located either on the same level, or the floor next above or below such level; provided, however, that at least one drinking fountain shall be installed for each assembly room, and that no drinking fountain shall be installed in any toilet room. Every drinking fountain shall meet the requirements of chapter 82 of this code.

55-89. Any cooling equipment, ice-making machinery or equipment, together with piping in connection therewith, installed in any public assembly unit, shall meet the requirements of chapter 85 of this code.

Fire Protection

55-90. Every public assembly unit shall comply with the requirements of the fire regulations of this code, except as otherwise provided under this chapter.

55-91. Every basement exceeding four thousand square feet in aggregate area, if such basement is used in whole or in part for the storage of combustible material, excepting space used solely for the storage of fuel for the heating plant in any public assembly unit, shall be equipped with a system of automatic sprinklers meeting the requirements of chapter 91 of this code.

55-92. Any stage or basement, which is required by section 55-91 to have automatic sprinklers, shall also be equipped with a standard system of inside standpipes meeting the requirements of chapter 92 of this code.

55-93. A city fire alarm box shall be located within a distance of one hundred feet from the principal entrance of every public assembly unit having a capacity of more than one thousand persons.

55-94. Standard fire extinguishers, as described in chapter 90 of this code, shall be installed in every public assembly unit as follows:

One standard fire extinguisher for each four thousand square feet or less area; provided first, that where a standard fire extinguisher is located in a public hall or corridor at a distance not to exceed seventy-five feet from any point within a public assembly unit and is accessible therefrom, such extinguishers shall not be required within such public assembly unit; and provided second, that from any point within any public assembly unit, the distance of travel to at least one such extinguisher shall not exceed seventy-five feet.

Exit Lighting and Signs

55-95. Every means of exit in a public assembly unit shall have a system of electric lighting as required by chapter 66 for the normal illumination of exits.

55-96. In every public assembly unit, standard exit signs, standard directional signs, and standard fire escape signs illuminated by electricity shall be provided to mark the ways of egress, meeting the provisions of chapter 66; provided, however, that standard exit signs and standard directional signs shall be required only for a public assembly unit having an aggregate capacity in all rooms of more than two hundred fifty persons.

Violation of Chapter Provisions

55-97. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 56

CHURCHES

Churches

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56-1. Every building, or part thereof, hereafter designed, erected, altered, converted, or used as a church, as defined in section 40-17, shall comply with the general provisions of this code pertaining to buildings, and with the special provisions set forth in this chapter.

56-2. The capacity of a church, and of its several parts and rooms, shall be computed in the manner required by chapter 62 of this code. In computing the total capacity of the building, there shall be excluded the entrance lobbies, foyers and corridors used for access and communication only, offices, private studios, vesting rooms, toilet rooms, kitchens, boiler or furnace rooms, storage rooms, and similar rooms of an administrative or service character in which persons do not congregate or in which they congregate only when absent from some other place of assembly in the building.

56-3. Every church, with a capacity of six hundred persons or less, shall have a frontage on at least two open spaces, one of which shall be a street, and the other of which shall be a street, a public alley not less than ten feet wide leading to a street, or a court or other open space not less than ten feet wide leading directly to or through a public alley not less than ten feet wide to a street. Every church with a capacity of more than six hundred persons shall have frontages on at least three open spaces, one of which shall be a street, and the other two of which shall be streets, public alleys not less than ten feet wide leading to streets, or courts or other open spaces not less than ten feet wide leading directly to or through public alleys not less than ten feet wide to streets.

Only one fireproof passageway, built as required by chapter 64 of this code for horizontal exit connections, may be used in place of one required open space other than a street.

Construction

56-4. Fireproof construction shall be used for the basement and the floor immediately above the basement in any church having a total capacity greater than eight hundred persons. Fireproof construction shall be used throughout for every church having a capacity, above the basement, greater than one thousand eight hundred, or in which the highest point of the highest usable floor, balcony, or gallery is more than thirty feet above average grade.

Fireproofing may be omitted from roof trusses which are located entirely at a height of thirty feet or more above the main floor, and which support no construction above the roof other than a spire, fleche, or similar structure containing no usable space; provided also that fireproofing may be omitted from roof trusses, if there is a ceiling of metal lath and plaster, or other not less fire-resistive construction, immediately beneath them, and they support no structure containing usable space. Non-combustible structural members supporting a roof only, and located more than twenty feet above the floor directly beneath, need not be fireproofed. The roof slabs, plates, or arches shall have a fire-resistive value of one hour.

56-5. Except in cases where ordinary or heavy timber construction is used under the provisions of section 56-7, semi-fireproof construction or a superior type of construction shall be used above the basement for every church having a capacity above the basement of one thousand eight hundred or less, and in which the highest point of the highest usable floor or balcony is not more than thirty feet above average grade; provided, however, that the basement, if any, and the floor immediately above it shall be of fireproof construction; provided further that unprotected metal roof trusses, or wood roof trusses meeting the requirements of heavy timber construction, may be used, if located entirely at a height twenty feet or more above the main floor, and which support no construction above the roof other than a spire, fleche, or similar structure containing no usable space, or if there is a ceiling of metal lath and plaster, or other not less fire-resistive construction, immediately beneath them, and they support no structure containing usable space; and provided also that wood may be used for all roof framing and roof covering supported by such trusses.

56-6. Ordinary or heavy timber construction, or a superior type of construction, shall be used for every church not more than two stories above grade in height, having a total capacity of eight hundred or less.

56-7. Any building, or part of a building, designed, intended, or used as a church and for other religious purposes by a group of one hundred persons or less, shall meet the requirements of the building provisions of this code for ordinary construction; provided, however, that any room used for such purposes shall not be at a higher level than four feet above grade.

Size and Location of Rooms

56-8. Ceiling height shall be measured from the floor line of a level floor, or from the highest point of a sloping floor to the lowest point of the ceiling, except that beams and girders may project twelve inches below the required ceiling height.

56-9. The minimum ceiling height of any room in a church shall be ten feet, except toilet rooms, which shall have a minimum ceiling height of eight feet, except storage and other similar rooms which shall have a minimum ceiling height of seven feet, and except assembly rooms which shall have a clear ceiling height of at least twelve feet; provided, however, that the clear height need not exceed eight feet either above or below a balcony for the audience or congregation; provided further, that the provisions of section 56-8 for the projection of beams and girders below the required ceiling height shall not apply to the eight foot clearance required above and below such a balcony.

56-10. The floor of an assembly room in a church of fireproof construction may be at any height above grade and shall be not more than twenty feet below grade at any point. If such floor is more than twenty feet above grade, or more than ten feet below grade at any point, the exits shall be increased as required in section 56-22 of this code.

56-11. The main floor of any assembly room in a church of other than fireproof construction shall be not more than ten feet above grade at any point, nor more than six feet below grade at any point.

56-12. In either fireproof or other than fireproof construction, stages or platforms not intended for occupancy by the audience or congregation may be raised above the level of the main floor of the assembly room.

56-13. There shall be no balcony for the audience or congregation in any church of ordinary or heavy timber construction. In a church of ordinary or heavy timber construction there may be balconies for the use of the organist, the choir, or the person or persons officiating at the service. No such balcony shall have a floor area of more than three hundred square feet. In a church of semi-fireproof construction there may be one balcony for audience or congregation; portions of such balcony may be at different levels and may have exits to more than one floor of the building, but in no case, shall the different levels overlap so that there will be a gallery above a balcony. In a church of fireproof construction there may be a balcony and one or more galleries, one located above another. The highest point of the floor of any balcony shall be not more than thirty feet above average grade in a church of semi-fireproof construction, nor more than twenty feet above grade in a church of ordinary or heavy timber construction.

56-14. No stage or platform designed for or used with combustible scenery shall be permitted in a church.

A stage or platform, which is neither designed for, nor used with, combustible scenery shall conform to the requirements as to type of construction of the building in which it is located, but is not required to meet any other special requirements. Such a stage or platform may be equipped with a draw curtain or curtains.

56-15. All motion picture machines for use with flammable film in a church shall be enclosed in a booth or booths as required by chapter 61 of this code.

Multiple Use Buildings

56-16. Subject to the provisions of this section and the following section, a church may be located in the same building with any other occupancy, except a garage of an area greater than six hundred square feet, except hazardous use occupancies prohibited in a church under section 51-66 of this code, and except as otherwise provided in chapters 47 to 58, inclusive, of this code.

56-17. Every church in multiple occupancy shall be separated from every other occupancy in the same building by construction of the fire-resistive value required by chapter 61.

Means of Exit

56-18. The width of all doorways, passages, stairways, and ramps in any church shall be computed on the basis of capacity determined in accordance with chapter 62 of this code. The width of exit doorways and corridors from any room other than an assembly room shall be at a rate not less than one foot six inches per one hundred persons capacity; and this minimum width shall be maintained throughout the building by a cumulative increase toward the outer exit doorways, so that the width at any point in any exit shall be at a rate not less than one foot six inches per one hundred persons served by such doorway or corridor. The width of stairways or ramps from any room other than an assembly room shall be at a rate not less than one foot three inches per one hundred persons capacity served.

Any doorway used as an exit or for any public purpose in a church shall be not less than three feet in clear width; and no other doorway in a church shall be less than two feet six inches in clear width. No passage or stairway serving as an exit shall be less than four feet in clear width; provided, however, that a balcony of a capacity of two hundred fifty persons or less may have a stairway and passage leading thereto of a clear width of not less than three feet.

56-19. *Number and Width.* In every church there shall be not less than two doorways affording exit from the building directly to a street, to a public alley not less than ten feet wide leading to a street or to a court, or other open space at least ten feet wide leading directly, or through a public alley not less than ten feet wide to a street; and if the capacity of the church exceeds eight hundred persons, there shall be not less than three such doorways. The combined width of such outside exit doorways shall be not less than the aggregate of the required widths of exit doors and corridors from the several rooms within the building, computed at the rates provided in the first paragraph of section 56-18 and section 56-22 of this code.

In a church having only two required outside exit doorways, the center lines of such doorways shall be separated by a distance not less than twenty per cent of the perimeter of the church. In a church having three required outside exit doorways, the center lines of any two such doorways shall be separated by a distance of not less than fifteen per cent of the perimeter of the church.

56-20. *Number.* There shall be not less than two stairways from every story above the first story in a church and not less than two stairways from every story below the first story. If any story above or below the first story in a church contains an assembly room with a capacity of more than three hundred persons, there shall be not less than three stairways from such story to the first story.

Location. Every stairway shall be so located as to discharge directly or through passageways and lobbies to an outside exit doorway located as required in the second paragraph of section 56-19 of this code. The required exit stairways serving any assembly room shall be so located that one such stairway is directly or through passageway or lobby accessible from each exit doorway of such room required by section 56-21 of this code.

Exits from Assembly Rooms

56-21. There shall be not less than two exit doorways from every assembly room of a capacity of eight hundred persons or less, and there shall be at least two normal and two emergency exit doorways from every assembly room which has a capacity of more than eight hundred persons. Every exit doorway from an assembly room in a church shall open through a foyer, or public passage, or directly to a street or public alley not less than ten feet wide, or to a court or open space not less than ten feet wide, connecting directly to, or through a public alley not less than ten feet wide with a street. In an assembly room having a capacity of eight hundred persons or less, the required exit doorways shall be located at opposite sides or at opposite ends of the room and in no case adjacent. In an assembly room having a capacity of more than eight hundred persons, the required exit doorways shall be arranged to serve opposite sides of the room in such manner that not more than sixty per cent of the required aggregate width serves one side of the room and not less than forty per cent serves the other. Individual doors shall be as widely separated as practicable.

56-22. The combined width of exit doorways and passages from an assembly room with a capacity of eight hundred persons or less shall be at a rate not less than two feet three inches per one hundred persons capacity. The combined width of normal exit doorways and passages from an assembly room with a capacity of more than eight hundred persons shall be at a rate not less than one foot six inches per one hundred persons capacity, and the combined width of emergency exit doorways and passages from such assembly room shall be at a rate not less than nine inches per one hundred persons capacity. The combined width of stairways and ramps affording exit from an assembly room with a capacity of eight hundred persons or less shall be at a rate of not less than one foot ten and one-half inches per one hundred persons capacity. The combined width of stairways and ramps affording normal exit from an assembly room with a capacity of more than eight hundred persons shall be at a rate not less than one foot three inches per one hundred persons capacity, and the combined width of stairways and ramps affording emergency exit from such assembly room shall be at a rate not less than seven and one-half inches per one hundred persons capacity. If the floor of an assembly room is more than twenty feet above average grade, the aggregate required width of stairways and other exits therefrom shall be increased ten per cent for each five feet or fraction thereof by which the level of said floor exceeds twenty feet above or ten feet below average grade.

56-23. In any assembly room in a church the aisles shall be so spaced that there shall be not more than fourteen seats in a row between adjacent aisles and not more than seven seats in a row between an aisle and a wall. The width of the aisles at any point shall be computed at the rate of one foot six inches per one hundred persons served, but no aisle shall be less than two feet six inches wide at any point.

56-24. There shall be no steps in aisles, except when necessary, from bank to bank, or from aisle to space between seats. The minimum width of cut of any step in an aisle shall be ten inches, and the maximum height of rise of any step in an aisle shall be eight inches.

56-25. Pews shall be spaced not less than two feet eight inches, measured from back to back. Seats of other types shall be spaced as provided in section 53-39 of this code.

56-26. The rise from bank to bank of seats shall not exceed one foot nine inches.

Windows and Ventilation

56-27. Every required window in a church shall face upon a public way, a public park, a public waterway, or a court or open space not less than ten feet wide of the character required by section 56-4 of this code.

56-28. Every room used as a place of worship in a church shall have either windows or skylights, or both, having a combined glass area of not less than five per cent of the floor area, arranged to open for a total area not less than three per cent of the floor area of the room, or a mechanical ventilating system, all as required by chapter 81 of this code.

56-29. Every assembly room in a church, other than a room used as a place of worship, shall have either windows or skylights, or both, having a combined glass area of not less than five per cent of the floor area, arranged to open for a total area not less than the requirements of chapter 81 of this code.

Equipment

56-30. The minimum width of any seat in a bank, in which there are arms or other divisions between sittings, shall be one foot eight inches, measured from the center of arms or other divisions. Where there are no arms or other separations between sittings, as in a pew or on a bench, the width of a sitting shall be computed at not more than one foot six inches.

56-31. In a church, a stage or platform for use without combustible scenery, and having a proscenium wall, may be equipped with a draw curtain; provided, however, that such curtain is treated with a fire-retarding solution in accordance with the provisions of chapter 90 of this code.

Fire Protection

56-32. A standard system of standpipe fire lines as provided in chapter 92 shall be provided in every church which is more than eighty feet in height.

Exit Lighting Signs

56-33. In every church, every required means of exit shall be provided with a system of electric lighting in accordance with chapter 66 for illumination of exits.

56-34. In each assembly room having a capacity of one thousand eight hundred or more persons, and throughout the required paths of exit travel from every such room, there shall be provided a separate system of additional electric lighting to facilitate egress in an emergency in accordance with chapter 66 for illumination of exits.

56-35. In every church, standard exit signs, standard directional signs, and standard fire escape signs illuminated by electricity shall be provided to mark the ways of egress in accordance with chapter 66 for illumination of exits.

Violation of Chapter Provisions

56-36. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 57

SCHOOL BUILDINGS

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57-1. In addition to those definitions set forth in section 40-1, other terms used in this chapter are, for the purposes of this chapter, defined as follows:

Basement room. Any room with a floor level more than two feet below average grade or with a ceiling eight feet or less above average grade.

Play room or recreation room. Any room designed, erected, altered, converted, or used for no other purpose than that of play or recreation.

School. School building as defined in section 40-18.

57-2. Every school shall be classified as a class 1 or a class 2 school. Wherever in this chapter there is any provision not stated specifically as applying to one or the other of those two classes, it shall apply to both.

Class 1 school. Class 1 shall include all rooms or units in schools for the lower grades and high school grades.

Class 2 school. Class 2 shall include all rooms, or units in colleges, or schools for grades higher than high school grades, and all commercial and vocational schools or schools for the teaching of the fine arts.

57-3. Every building, or part of a building, hereafter designed, erected, altered, converted, or used for the purposes of a school, shall comply with the general provisions of this code pertaining to buildings, and also to the special provisions set forth in this chapter. Every building, or part of a building, containing both a class 1 and class 2 school shall conform to the requirements for a class 1 school, unless the two classes are separated by standard fire separations of the fire-resistive value required in chapter 61 of this code. Where any school room is hereafter designed, erected, altered, converted, or used for the purposes of more than one occupancy, such room shall be made to comply with the requirements of this chapter in respect to each such occupancy, and the most restrictive requirements shall govern in any case.

57-4. Any building, or part of a building, designed, intended, or used as a place of public or private instruction, in which the total number of teachers and students for whom seating accommodations are provided in all rooms does not exceed ten, shall meet the requirements of the building provisions of this code for a single dwelling; provided, however, that any floor above the main exit story shall have exits meeting the requirements of this chapter.

Capacity

57-5. The capacity of a school is the sum of the number of fixed seats, plus an allowance as provided in chapter 62 of this code, for any floor area not occupied by fixed seats and their aisles. The following rooms and spaces shall not be included in computing the capacity of a school:

Assembly rooms, gymnasiums, and other places of assembly of types suitable only for the use of students when seats are provided elsewhere in the building for all students.
Bicycle rooms.
Cafeterias and other rooms for serving food; also rooms in which provision is made for students to eat lunches brought from the outside.
Corridors and offices not used for instruction.
Boiler and furnace rooms.
Fuel storage rooms.
Locker rooms.
Storage rooms and toilet rooms.
Any other rooms not listed above into which students do not enter.

However, such excepted rooms and spaces shall have exits computed on the basis of their capacity in accordance with the requirements of this chapter applicable to such exits.

57-6. The capacity of any room is the sum of the number of fixed seats, plus an allowance based on the provisions of chapter 62 of this code for any floor area not occupied by fixed seats and their aisles.

57-7. Any room with a floor area of more than one thousand five hundred square feet, and used for study or assembly purposes, shall be classed as an assembly room. The capacity of an assembly room is the aggregate capacity of the main floor, balconies, galleries, stages, and platforms.

Lot Occupancy

57-8. Every class 1 school shall have frontages on at least two open spaces, one of which shall be a street and the other of which shall be a street, a public alley not less than ten feet wide leading to a street, or a court not less than ten feet wide leading directly, or through a public alley not less than ten feet wide, to a street.

Every class 2 school shall have at least one frontage on a street.

57-9. No required window or doorway of a class room, or study room, shall be nearer than eight feet to a lot line in the case of a class 1 school, or nearer than four feet to a lot line in the case of a class 2 school; provided, however, that these restrictions shall not apply to any window or doorway which faces a public way, public park, or other open public space more than ten feet wide.

The distance from lot lines required by this section shall be maintained for the first four stories. Above the fourth story, each such distance shall be increased one foot for each additional story in a class 1 school and one-half foot for each additional story in a class 2 school.

Construction

57-10. Fireproof construction shall be used for every school more than four stories above grade in height, or more than fifty feet above grade in height to the fourth floor, except as provided under section 57-14.

Non-combustible structural members supporting a roof only, and located more than twenty feet above the floor directly beneath, need not be fireproofed. The roof slabs, plates, or arches shall have a fire-resistive value of one hour.

57-11. Semi-fireproof construction or a superior type of construction shall be used for every school one story above grade in height having a capacity of more than six hundred persons, and for every school four stories or less in height and not more than fifty feet above grade in height to the fourth floor; except as otherwise provided under sections 57-12 and 57-14.

57-12. Ordinary or heavy timber construction or a superior type of construction shall be used for every school not more than one story above grade in height, having a capacity of not more than six hundred persons, and for every school not more than two stories above grade in height, having a capacity of not more than two hundred persons; except as otherwise provided under sections 57-13 to 57-15, inclusive.

57-13. In every school of ordinary, heavy timber, or semi-fireproof construction, the floor immediately above the basement, if any, shall be of three hour fire-resistive construction.

57-14. Any school may have appended to it a one story or one story and basement structure used only for assembly, gymnasium, natatorium, or similar purposes, having a roof and roof-supporting members, including columns unprotected with fire-resistive material; provided, however, that such structure shall comply with chapter 61 of this code.

57-15. Portable buildings of non-combustible frame construction in units not larger than twenty-eight feet by thirty-five feet, nor more than one story high, and used solely for school purposes, may be erected; provided, however, that the roof of each unit shall be covered with metal or other non-combustible material; and provided further that each such building shall have two exit doorways separated by a distance not less than the smallest horizontal dimension of the building; and provided also, that each such unit shall in no case be nearer than ten feet to any other building at any point.

No such unit shall be kept on any lot or block for a period of more than two years after the date of issue of the original permit.

Assembly Rooms and Gymnasiums

57-16. Every assembly room and gymnasium in a school shall have a clear ceiling height of at least twelve feet; provided, however, that such clear height need not exceed eight feet either above or below a balcony.

57-17. The floor of an assembly room or gymnasium in a school of fireproof construction may be at any height above grade, but shall be not more than twelve feet below grade at any point. If such a floor is more than twenty feet above grade at any point, the exits shall be increased as required elsewhere in the building provisions of this code. [Amend. Coun. J. 11-15-39, p. 1203.]

57-18. The floor of an assembly room or gymnasium in a school of other than fireproof construction shall be not more than ten feet above grade at any point, nor more than six feet below grade at any point. An assembly room or gymnasium in a school of semi-fireproof construction shall have a capacity of not more than one thousand five hundred persons. An assembly room or gymnasium in a school of heavy timber or ordinary construction shall have a capacity of not more than six hundred persons; provided, however, that an annex meeting the requirements of section 57-14 may have a capacity of not more than one thousand five hundred persons.

57-19. There shall be no spectators' balcony in an assembly room or gymnasium of a school of other than fireproof or semi-fireproof construction. In a school of semi-fireproof construction, there shall be no spectators' balcony located in whole or in part above any other spectators' balcony; provided, however, that a single balcony may have exits to more than one floor of the building.

57-20. In an assembly room, having a stage designed for or used with combustible scenery, the stage, the assembly room, and all necessary rooms or spaces shall conform to the requirements for such rooms or spaces in a theater as set forth in chapter 53 of this code, it being understood that such an assembly room shall be made to comply with the requirements of a theater auditorium which are applicable to such a room, except as otherwise provided in this chapter. Such a stage or assembly room, and accessory rooms or spaces, shall not be located in any building of other than fireproof or semi-fireproof construction.

57-21. All motion picture machines for use with nitrocellulose film in a school shall be enclosed in a booth or booths meeting the requirements of chapter 61 of this code with the following exceptions:

(a) No enclosure of more than one hour fire-resistive construction shall be required where only one motion picture machine is provided for or installed, unless it be a separation between occupancies in a multiple use building.

(b) No toilet room or water closet shall be required.

(c) Where only one motion picture machine is provided for, or is installed in a booth, a floor area of fifty square feet shall be required. Where two motion picture machines are provided for or installed, an area of seventy-five square feet shall be required. Where more than two motion picture machines are provided for or installed, the entire floor area of the booth shall be the same as required for a theater. There is no floor area requirement in a school for any machine or projector other than a motion picture projector for use with flammable film.

Size and Location of Other Rooms

57-22. For the purposes of this chapter, ceiling height shall be measured from floor line to lowest ceiling line. Beams, girders, and ducts may project twelve inches below the required ceiling height; provided, however, that this provision shall not apply to the eight foot clearance required above or below a balcony.

57-23. In a class 1 school, every class room or study room with a floor area of more than two hundred square feet shall have a ceiling height of at least twelve feet, except as provided elsewhere, and every class room or study room with a floor area of not more than two hundred square feet shall have a ceiling height of at least ten feet. No basement room shall be designed, erected, altered, converted, or used for the purposes of study or instruction.

57-24. Office type partitions seven feet six inches or more in height may be installed in any room used exclusively for commercial training; provided, however, that such partitions are glazed for their entire height above a level three feet above the floor; and provided further that no such glazed enclosure has a floor area of more than two hundred fifty square feet; and provided also, that the ventilation of the room which is subdivided by such partitions is equal to the ventilation required for a class room.

57-25. Every cafeteria and other room for serving food in a school shall have a ceiling height of at least twelve feet, unless it is equipped with a mechanical ventilating system as provided in chapter 81 of this code, in which case it may have a ceiling height of not less than ten feet six inches; provided, however, that these requirements shall not apply to a room in which provision is made for students to eat lunches brought from the outside.

57-26. Every play room or recreation room shall have a ceiling height of at least ten feet.

57-27. Every toilet room shall have a ceiling height of at least nine feet.

57-28. No storage room or storage closet shall be located under any stairway in any school of other than fireproof construction.

Multiple Use Buildings

57-29. Subject to the provisions of section 57-30, a school may be located in the same building with any other occupancy, except a hazardous use unit prohibited in a school under section 51-66 of this code, a garage, or a theater and except also as otherwise provided under chapters 47 to 58, inclusive, of this code. No class 1 school shall be located above the sixth story in any building, any part of which is used for other than school purposes.

57-30. Every class 1 school and every class 2 school in the same building shall be separated from each other, and every school in multiple occupancy shall be separated from every other occupancy in the same building by standard fire separations of the fire-resistive value required in chapter 61 of this code.

Exit Width

57-31. The width of all doorways, passages, stairways, and ramps in a school shall be computed on the basis of capacity determined in accordance with sections 57-5 to 57-7, inclusive. The width of exit doorways and corridors from any room, other than an assembly room or gymnasium, shall be at a rate of not less than one foot six inches per one hundred persons capacity. The width of stairways or other vertical means of exit, other than for an assembly room or gymnasium, shall be at a rate of not less than one foot three inches per one hundred persons aggregate capacity served by such means of exit; provided, however, that for class 2 schools, having stairways enclosed as required elsewhere in the building provisions of this code, the combined width of required stairways shall be computed according to the greatest capacity of any floor for which they serve as exits, and need not be increased for additional floors served thereby, except as required by this chapter for exits from assembly rooms and gymnasiums.

57-32. No doorway used as an exit in a school shall be less than two feet eight inches in clear width. No main corridor shall be less than six feet in clear and unobstructed width. No stairway shall be less than three feet eight inches in width, and no basement stairway shall be less than two feet six inches in width, except as otherwise provided in section 57-42 for teaching amphitheaters.

Corridors

57-33. Corridors in a school shall be classified as main and secondary. A main corridor is a corridor connecting any assembly room, gymnasium, class room, or other room used for purposes of assembly or instruction, with an exit stairway or an outside exit doorway. A secondary corridor is any corridor other than a main corridor.

57-34. In class 1 schools every main corridor shall terminate, either directly or at a right angle, in access to a stairway.

57-35. If lockers are placed in any corridor in a school, the width of such corridor shall be increased so as to maintain the full required clear width when locker doors are open in any position.

57-36. No door or other obstruction which would interfere with exit travel shall be placed in any main corridor in a school, but this requirement shall not prohibit the installation of doors, gates, or other devices which can be used to shut off a section or sections of the building for special use; provided, however, that each section so formed has all the exit facilities which under this chapter would be required if the separation were permanent; and provided further, that such door, gate, or other device is of a type which, when fully open, is entirely free of the corridor.

Exits From Assembly Rooms and Gymnasiums

57-37. There shall be at least two exit doorways from every assembly room or gymnasium in a school, and there shall be at least three exit doorways from every such assembly room or gymnasium which has a capacity of more than three hundred persons. Every exit doorway from an assembly room or gymnasium in a school shall open into a foyer or public passage, or directly to a street, a public alley not less than ten feet wide leading to a street, or to a court or other open space not less than ten feet wide leading directly, or through a public alley not less than ten feet wide, to a street. In an assembly room or gymnasium having only two required exit doorways, the vertical center lines of such doorways shall be separated by a distance not less than forty per cent of the perimeter of the room. Where three exit doorways are required, they shall be so located that their vertical center lines divide the perimeter of the room into three portions, one of which shall be at least forty per cent of such perimeter, while each of the other two portions shall be at least fifteen per cent of such perimeter.

57-38. The combined width of doorways and the combined width of corridors affording exit from any assembly room, gymnasium, balcony, or other assembly space with a capacity of more than eight hundred persons shall be not less than two feet three inches per one hundred persons capacity. The combined width of stairways affording exit from any such assembly space shall be not less than one foot ten and one-half inches per one hundred persons capacity. If the floor of an assembly room is more than twenty feet above average grade, the aggregate required width of stairs and other exits therefrom shall be increased ten per cent for each five feet or fraction thereof by which the level of said floor exceeds twenty feet above average grade.

57-39. In any assembly room or gymnasium in a school, except in a teaching amphitheater, the aisles shall be so spaced that there will be no more than fourteen seats in a row between adjacent aisles, and not more than seven seats in a row between an aisle and a wall. The width of the aisle at any point shall be computed at the rate of one foot six inches per one hundred persons served. but no aisle shall be less than two feet six inches in width at any point. There shall be no steps in any aisle, except where necessary from bank to bank, or from aisle to spaces between seats, and except in teaching amphitheaters.

57-40. Rows of seats with backs shall be not less than two feet eight inches apart, measured horizontally from back to back and rows of seats without backs shall be not less than two feet two inches apart, measured horizontally between vertical planes through the rearmost edges of seats in successive rows; provided, however, that these restrictions shall not apply to teaching amphitheaters, requirements for which are given in section 57-42.

57-41. The rise of any bank of seats shall not exceed one foot nine inches, except in teaching amphitheaters.

57-42. The width of any aisle or stair in a teaching amphitheater shall be computed at the rate of one foot six inches per one hundred seats for which it provides exit; provided, however, that no aisle or stair shall be less than two feet six inches wide at any point. There shall be not more than ten seats in a row between aisles and not more than five seats in a row between an aisle and a wall. In a teaching amphitheater with a seating or standing capacity of not more than twenty persons, rises and cuts of stairs may be of any desired dimension and arrangement. In a teaching amphitheater of more than twenty persons capacity, rises shall not exceed nine inches in height and cuts shall be not less than nine inches in width and both rises and cuts shall be uniform throughout any stair.

Exits From Class and Study Rooms

57-43. Every class room or study room shall have not less than one exit doorway opening to a main corridor or directly to the outer air. If such class room or study room has a floor area of more than eight hundred square feet, it shall have not less than two exit doorways, one of which shall open to a main corridor or directly to the outer air, and the other of which shall open in like manner or into another class room or study room.

57-44. There shall be an aisle not less than one foot six inches wide along each wall of every class room or study room in a school. No intermediate aisle shall be less than one foot four inches wide, and no main aisle or cross aisle shall be less than two feet six inches wide. There shall be not more than fourteen seats in a row between adjacent aisles.

Stairways

57-45. The number of stairways in any school shall be sufficient to meet the requirements for location as given in section 57-47 and the combined width of such stairways shall be sufficient to meet the requirements of one foot three inches per one hundred persons served, as provided in section 57-31; provided, however, that there shall be not less than two stairways in any school having a class room, study room, or other room in which students congregate, above the main exit story, nor less than two stairways in any school having such a room below the main exit story.

57-46. Every stairway shall start at the highest story in a school; or, if the school is not of uniform height, shall start at the highest story in the wing or part of the school in which it is located.

57-47. Every required exit stairway in a class 1 school shall be built against an exterior wall of the building. In any school, the required stairways shall be so located that in any story either above or below the main exit story, the distance from any exit doorway from a class room or study room to a required stairway entrance shall not exceed sixty feet where the doorway is located between the dead end of a corridor and the stairway, nor ninety feet in any other case; provided, however, that any exit from a basement to a street, to a public alley not less than ten feet wide leading to a street, or to a court or other open space not less than ten feet wide leading directly, or through a public alley not less than ten feet wide, to a street shall be considered a stairway, if it has the location and width required for a stairway. The distance from a class room or study room exit doorway to a stairway entrance shall be measured on the most direct route of travel from the center line of the exit doorway to the center line of the first riser of the exit flight. Every required or non-required enclosure of a stairway shall have an exit doorway to the outer air at the main exit level of the building.

57-48. Every stairway in a class 1 school shall have a landing at each habitable story.

57-49. Every basement stairway in a school shall lead directly to a room, corridor, or other part of the building from which there is an exit to the outer air, either directly or by way of a corridor, stairway, or a combination of a corridor and a stairway, or such basement stairway may itself lead directly to the outer air. No basement stairway shall have a cut of less than nine inches nor a rise of more than eight inches, except as provided in section 57-47 for teaching amphitheaters.

57-50. Where an exit from a school is by way of a stairway or steps located outside the building, there shall be a level landing not less than three feet long between the doorway and said stairway or steps, and such landing shall extend inside the building for a further distance of three feet before the commencement of any interior stairway or incline.

57-51. No flight of stairs or steps for class 1 schools shall have less than three rises. No flight for class 1 schools shall have a greater height than eleven feet six inches without a level landing or an intermediate platform.

Outside Exit Doorways and Doors

57-52. In every school, other than a portable school, there shall be two doorways affording exit from the building directly to a street, to a public alley not less than ten feet wide leading to a street, or to a court or other open space not less than ten feet wide leading directly, or through a public alley not less than ten feet wide, to a street.

57-53. In a class 1 school, having stairways as provided in this chapter, outside exit doorways shall be located in accordance with section 57-47. In either a class 1 or a class 2 school, two outside exit doorways shall be separated by a distance not less than thirty per cent of the perimeter of the school, measured on said perimeter between the door centers.

57-54. No revolving door shall be placed in any class 1 school. Revolving doors may be used in class 2 schools; provided, however, that they are wholly in addition to the doors required by the building provisions of this code.

Other Means of Exit

57-55. Every floor above the second floor in a school for crippled children shall be served by an elevator or elevators with a floor area of at least four square feet per person, computed on the basis of a carrying capacity of all elevators sufficient to empty the school above the second floor in twenty minutes.

57-56. Any roof or part of a roof, used for assembly, recreation, or instruction, shall have exits conforming to the requirements for exits from an assembly room as given in sections 57-37 and 57-38.

57-57. In any school, every inner court or closed lot line court shall have an opening at the bottom not less than three feet in clear width and six feet six inches in clear height, affording an exit either directly at grade or through a passage leading directly to a main stairway or a main corridor. Any door or gate in such an exit shall be without any fastening device which can prevent its opening from the court side by any person at any time.

57-58. Every cafeteria and other room for serving food with a floor area of more than eight hundred square feet shall have two exits spaced as required in section 57-37 for exits from an assembly room. The combined width of required exits from such a room shall be not less than two feet three inches per one hundred persons capacity of said room.

Windows and Ventilation

57-59. Every required window in a school shall face upon a public way, a public park, or a yard, or a court meeting the requirements of section 57-9 of this code.

57-60. In a class 1 school, every class room, study room, or other room used for purposes of instruction, shall have windows or skylights, or both windows and skylights, with a total net glass area equal to at least twenty per cent of the floor area of the room, except in the laboratories, demonstration rooms, or teaching amphitheaters in which teaching or demonstration by such lighting is impractical.

57-61. Windows to be considered in the requirements of section 57-60 must be located wholly on one side of the room.

57-62. In any class room or study room of a class 1 school, the top of every required window shall be at a height above the floor equal to not less than one-half the width of the room; said height being measured to the top of the window opening at the exterior face of the wall.

57-63. If a ceiling light is used under a skylight in a class room or study room, it shall be at least as large as the area of the skylight well, and both ceiling light and skylight shall be twenty-five per cent greater in area than is required when a skylight alone is used.

57-64. Every class room, study room, or other room used for purposes of instruction shall be ventilated according to one or the other of the two following means:

There shall be windows, skylights, or other openings with closures arranged to open so as to provide a total net area of openings for natural ventilation equal to not less than eight per cent of the floor area of the room.

There shall be a system of mechanical ventilation which shall meet the requirements of chapter 81 of this code which are applicable to the mechanical ventilation of such a room.

57-65. There shall be a window with not less than twelve square feet of glass area at every landing or intermediate platform of a stairway in a class 1 school. Every window in a required or non-required enclosure of such a stairway in buildings more than three stories and basement in height shall be a type A window. [Amend. Coun. J. 11-6-40, p. 3433.]

57-66. Every assembly room in a school shall have windows or skylights, or other openings with closures, or all of them, arranged to open so as to provide a total area for natural ventilation of not less than the percentage of floor area required by chapter 81 of this code, or shall have a mechanical ventilating system as required by chapter 81 of this code.

57-67. Every cafeteria and other room for serving food, and every room in which provision is made for students to eat lunches brought from home, in any school shall be provided with natural lighting from either windows, skylights, or both, having a total net glass area not less than ten per cent of the floor area of the room. Every such room shall have windows, skylights, or other openings with closure, or all of them, arranged to open so as to provide a total area for natural ventilation of not less than five per cent of the floor area of the room. If the room contains any equipment for cooking or warming food, there shall also be a mechanical ventilating system which shall meet the requirements of chapter 81 of this code which is applicable to such a system.

Equipment

57-68. The requirements of this section shall apply to all fixed seats, except in a teaching amphitheater, the requirements for which are given in section 57-42. The minimum width of a seat in a row in which there are arms or other divisions between sittings shall be one foot eight inches measured from center to center of arms or other divisions. Where seats are arranged without arms or other divisions between sittings, the width of a sitting shall be computed at one foot six inches.

57-69. In any assembly room or gymnasium the spacing of seats, the rise of banks, and the width and location of aisles shall be as required in sections 57-39 to 57-41, inclusive.

57-70. Every opening between a stage and an assembly room or other room in any school shall be equipped with a fire curtain meeting the requirements of chapter 53 of this code for a proscenium fire curtain in a theater; provided, however, that in any school it shall be permissible to use a draw curtain for a stage or platform which is neither designed for nor used with combustible scenery.

57-71. Drop curtains, draw curtains, borders, wings, draperies, hangings, stage sets, and other scenery, stage paraphernalia of every sort, sheaves, pulleys, cables, their supports and other equipment used back of the curtain in any school shall be made to conform with the requirements of chapter 90 of this code. Acoustical treatment used on any stage shall meet the provisions of chapter 61 of this code.

57-72. No scenery shall be installed or provided for in any basement of any school.

57-73. Entrance doors to toilet rooms for males and females in any school shall be separated by a distance of not less than twenty feet, and shall be plainly marked for males "Boys" or "Men", and for females "Girls" or "Women".

57-74. The proportion of sexes in a school shall be assumed as one-half male and one-half female, unless the school is exclusively for students for one sex. Water closets and urinals shall be provided to serve each story on the basis of the combined capacity of all the rooms in that story computed in accordance with sections 57-5 to 57-7, inclusive, and shall be located either in that story or in the first story above or below it; provided, however, that the capacity of assembly rooms and gymnasiums shall not be considered in determining the number of water closets and urinals to be provided. The number of water closets and urinals required shall be as follows:

For each fifty males or fraction thereof — 1 water closet.
For each twenty-five females or fraction thereof — 1 water closet.
For each twenty-five males or fraction thereof — 1 urinal.

Water closets and urinals for use in connection with rooms used exclusively by regular occupants of the school, such as rest rooms or gymnasium locker rooms, may be included in the total number of such fixtures required.

57-75. There shall be at least one lavatory in every toilet room.

57-76. There shall be at least one drinking fountain for each two hundred fifty students, and at least one such fountain in each story. No drinking fountain shall be located in any toilet room.

57-77. No cooling equipment, refrigerating equipment, ice making machinery or equipment, piping in connection with such equipment or machinery, or other equipment, machinery, or piping, for or in which any toxic, irritant, corrosive, flammable, or explosive gas is used as the refrigerant or cooling medium, shall be installed in any part of any school unless such equipment, machinery, or piping comprises a small refrigerating or cooling unit meeting the requirements of chapter 85 of this code.

57-78. Every school building over one story high shall be equipped with a standard fire alarm system, installed and arranged in accordance with the provisions of chapter 90 of this code.

In every school for the deaf, there shall be an electric light with a red globe near each teacher's desk. Every such light shall be arranged to operate in addition to, and in connection with, the sounding devices required in connection with the fire alarm system.

Fire Protection

57-79. Standard fire extinguishers, as described in chapter 90 of this code, shall be installed in every school as follows:

Two standard fire extinguishers on each floor and in each basement and at least one standard fire extinguisher in each assembly room.

All fire extinguishing equipment shall be kept in good condition and repair and shall be ready for immediate use at any and all times. [Rep. and added. Coun. J. 6-19-41, p. 4954.]

57-79.1. It shall be the duty of the principal or other person in charge of the pupils in each school building to examine, or to have examined by the engineer, janitor of the building, or other competent authorized person, all stairways, hallways, corridors, fire escapes, fire escape platforms and the approaches leading thereto; to examine and operate all exit doorways and windows leading to all means of exit, to examine all fire extinguishing apparatus and fire alarm equipment at least once each and every day that such school building is used for school purposes. [Added. Coun. J. 6-19-41, p. 4954.]

57-79.2. It shall be the duty of the principal or other person in charge of the pupils in each school building to conduct a good and efficient fire exit drill, subject to the rules and regulations of the bureau of fire prevention of the fire department, which drill shall be for the purpose of evacuating the occupants from the building in the event of fire or other emergency. This fire exit drill shall be practiced not less than twice each calendar month that such building is used for school purposes. [Added. Coun. J. 6-19-41, p. 4954.]

57-79.3. The principal or other person in charge of the pupils in each school building shall make a written monthly report showing the condition of all exits and the approaches thereto at the time of the inspection, the condition of the fire extinguishing equipment and the fire alarm equipment at the time of the inspection. A written report shall also be made of each fire exit drill, the date and time the fire exit drill was conducted, the number of pupils participating and the total time elapsed from the first alarm signal until the last person was out of the building.

The above required reports shall be made to the president of the board of education in the case of all school buildings under the control of the board of education, and to the division fire marshal in charge of the bureau of fire prevention in the case of all other schools. [Added. Coun. J. 6-19-41, p. 4954.]

57-79.4. It shall be the duty of the president of the board of education to make a written report concerning all school buildings under his jurisdiction to the division marshal in charge of the bureau of fire prevention at intervals of not more than four months, which reports shall contain a record of all fire exit drills conducted, the date and time the fire exit drills were conducted, the number of pupils participating and the time that elapsed from the first fire exit drill signal until the last person was out of the building. [Added. Coun. J. 6-19-41, p. 4954.]

57-79.5. All fire escapes, fire escape platforms, halls, aisles, passages, corridors, stairways and all means of egress and the approaches leading thereto in all school buildings shall be maintained in good condition and ready for immediate use at any and all times. Said means of egress shall be kept free of snow, ice and all obstructions.

All fire alarm and fire exit drill equipment shall be kept in good condition and repair and shall be ready for immediate use at any and all times. [Added. Coun. J. 6-19-41, p. 4954.]

Artificial Lighting and Exit Signs

57-80. Equipment for electric lighting shall be provided in all rooms in a school in accordance with the following table:

Room	Intensity of illumination required (foot candles)
Sewing rooms, draughting rooms, art rooms, and other rooms where fine detail work is done	8
Class rooms, study halls, libraries, laboratories, manual training rooms, and offices	5
Gymnasiums, play rooms, and sports rooms	3
Assembly rooms, cafeterias, and other rooms where food is served, rooms in which provision is made for students to eat lunches brought from home, and other rooms in which students congregate for extended periods but not for study	2
Locker rooms, toilet rooms, and recreation areas	1

In sewing rooms, draughting rooms, art rooms, and other rooms where fine detail work is done, the required illumination shall be on the plane of the work; in all other rooms it shall be on a plane thirty inches above the floor and shall cover every part of such plane.

57-81. In every school every required means of exit shall be provided with a system of electric lighting in accordance with chapter 66 of this code.

57-82. In each assembly room having a capacity of one thousand eight hundred or more persons, and throughout the required path of exit travel from every such room, there shall be provided a separate system of additional electric lighting to facilitate egress in an emergency, in accordance with the provisions of chapter 66 of this code.

57-83. In every school, standard exit signs, standard directional signs, and standard fire escape signs illuminated by electricity shall be provided to mark the ways of egress, in accordance with chapter 66 of this code.

Violations of Chapter Provisions

57-84. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 58

OTHER BUILDINGS AND STRUCTURES

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58-1. All other buildings and structures, as defined in section 40-19, shall comply with the requirements of the general provisions and the structural provisions of this code pertaining to buildings, and in addition shall comply with the special provisions of this chapter.

Hangars

58-2. A hangar is hereby defined as a building, or part of a building, designed, intended, or used as a place for the housing, shelter, or support of one or more aircraft for the purposes of storage, display, sale, demonstration, servicing, repair, testing, remodeling, adjustment, painting, or any other purpose; provided, however, that a building or space in a building used only for the manufacture or repair of aircraft without gasoline or other motor fuel, and in which building no flammable solution of cellulose nitrate, cellulose acetate, or other similar dope is used, or a room or space for the storage, display, or sale of motor vehicles which are entirely without gasoline or other motor fuel, or rooms used as waiting rooms, dining rooms, dressing rooms, toilets or other utility rooms, shall not be deemed to be a hangar if such room or space is separated from all hangar uses by a standard fire division wall.

58-3. Floors of hangars shall be not less than three inches above grade at the vehicle entrance doors, shall be of non-combustible material, and shall be pitched not less than one-eighth inch in each foot of horizontal distance to drain toward the vehicle entrance doors or to scuppers in the walls.

58-4. No basement, cellar, pit, duct, or other opening may be built beneath any hangar; provided, however, that the heating plant for a hangar may be placed immediately below the grade floor of a hangar, subject to the provisions of this code for heating plants.

58-5. Except as otherwise provided in this code, hangars may be constructed on the roofs of fireproof buildings which are located outside of the fire limits. Such hangars shall be of fireproof or semi-fireproof construction, and shall be equipped with a standard system of automatic sprinklers.

58-6. Hangars within the fire limits or provisional fire limits shall be built of ordinary construction or of more fire-resistive construction, except as otherwise provided in the following sections.

58-7. Hangars built outside the fire limits of wood frame construction shall be located not less than fifty feet from any other building, property dividing lot line, or the opposite side of the public way; provided, however, that a hangar, housing a single airplane and having an area of not more than twenty-five hundred square feet, shall be located not less than fifteen feet from any other building or any property dividing lot line. Any hangar built of wood frame construction or of less fire-resistive construction shall not have an area of more than ten thousand square feet.

58-8. Any hangar more than one story high above grade shall be of fireproof construction.

58-9. In computing any fire area in a hangar, the combined area of all balconies and mezzanines shall be included; provided, however, that a head house having no aircraft therein, when separated from other parts of the hangar by four hour fire-resistive construction, shall be considered as a business unit, and shall comply with the special provisions of chapter 50 of this code for business units.

58-10. Any fire area in a hangar shall not exceed the areas given in the following table:

Maximum Allowable Fire Area in Hangar Not More Than One Story High

	Hangar not equipped with a standard system of automatic sprinklers (sq. ft.)	Hangar equipped with a standard system of automatic sprinklers (sq. ft.)
Fireproof or semi-fireproof construction	30,000	60,000
Heavy timber construction	25,000	50,000
Ordinary construction	20,000	40,000
Wood frame construction	10,000	20,000
Maximum Allowable Fire Area in Hangar More Than One Story High		
Fireproof construction	30,000	60,000
Semi-fireproof construction	25,000	50,000

58-11. Every heating plant and its fuel storage in a hangar shall be completely separated from all hangar uses in the building in which it is located by two hour fire-resistive construction. Entrance to such heating plant shall be from the outside only.

58-12. Any hangar in the same building with any other occupancy shall be subject to the requirements of that part of this chapter dealing with hangars and to the requirements of the sections on multiple uses in chapters 47 to 57, inclusive, of this code.

58-13. Any hangar of ordinary, heavy timber, or semi-fireproof construction shall not be located in any building, designed, erected, altered, converted, used, or intended to be used as a multiple dwelling, hospital, school, or theater, or in any building containing a single dwelling in which the floor of any habitable room is more than eighteen feet above grade.

58-14. Any hangar of wood frame construction shall not be located in any building designed, used, or intended to be used for other than hangar purposes; provided, however, that the rooms comprising the workshop, locker rooms, dressing rooms, and other utility rooms required in connection with such hangar may adjoin the hangar when separated therefrom by four hour fire-resistive construction, having each opening equipped with a double standard fire door.

58-15. Where a hangar is located in a building, any part of which is used for other than hangar purposes, it shall be separated from such other use by not less than four hour fire-resistive construction.

58-16. Every doorway in a wall separating a hangar from any part of a building used for other than hangar purposes shall be protected with double standard fire doors.

58-17. In every hangar with an area of more than ten thousand square feet, there shall be two or more pedestrian exit doorways in addition to the vehicle exit doorway. Two of these exit doorways shall be located at opposite sides or ends of the building. No point in any hangar shall be more than one-hundred fifty feet from any such exit door, measured along the line of travel. Where hangars are built on roofs of fireproof buildings, there shall be two or more enclosed stairways from the floor of the hangar to the ground which stairways shall be located each within twenty-five feet of a required exit doorway; provided, however, that where only two stairways are required one of them may be a fire escape stairway.

58-18. Artificial lighting shall be restricted to electricity.

58-19. In every hangar, standard exit signs, standard directional signs, and standard fire escape signs illuminated by electricity shall be provided to mark the ways of egress, meeting the requirements of chapter 66 of this code.

Prisons and Similar Buildings of Detention

58-20. There shall be included in this occupancy classification, jails, prisons, police stations, reformatories, houses of correction, and other similar buildings where persons are or may be forcibly restrained, excepting institutional buildings.

58-21. Every building included in this classification shall be of fireproof construction; provided, however, that buildings of not more than two stories in height above the ground and of not more than five thousand square feet in area may be of ordinary or of more fire-resistive construction; and provided further that in every such building, that part containing the cell block, lockup, or the patrol wagon quarters shall be of fireproof construction, and this part shall be separated from all other parts of the building by a standard fire-division wall.

58-22. In all court rooms in buildings referred to in section 58-20, the ceiling height shall be not less than eleven feet.

58-23. No sleeping rooms nor cell blocks shall be constructed below the first floor level in any building included in this classification.

58-24. Every room in a police station other than the cell block shall have a ceiling height of not less than ten feet.

58-25. Offices and other similar rooms, not including toilets, closets, and storerooms, shall have a floor area of not less than seventy square feet and a ceiling height of not less than eight feet.

58-26. Every cell block shall have three or more walls facing upon a public way, open yard, or court.

58-27. Capacity of various rooms shall be computed as provided by chapter 62 of this code; provided, however, that the capacity of cell blocks shall be computed on the basis of one person for each twenty-five square feet of floor area; and provided further, that when such cell block shall have provision for persons, including all inmates or prisoners and all guards, attendants, and other employes, more than the number computed by floor area, then exits shall be provided for the actual number of persons in such cell blocks.

58-28. Every floor in every building included under section 58-20 shall have two or more separate and distinct exits from each floor. Every room or space open to the public, and every room or space occupied by inmates or prisoners, or guards, attendants or other employes in any building referred to in section 58-20, which room or other space has a seating capacity of more than one hundred persons, or which has a floor area of more than one thousand square feet, shall have, in addition to the entrance thereto, not less than one exit arranged to permit passage through and from an outside doorway without returning to the place of entrance.

58-29. The widths of doorways, passages, stairways, ramps, or other required means of normal exit from rooms in all buildings referred to in section 58-20 shall be computed at a rate of not less than one foot six inches per one hundred persons capacity, and this minimum width shall be maintained by a cumulative increase toward the outside entrance doors.

58-30. In addition to the normal exits required, there shall be provided also, emergency exits from every room or story having a capacity of more than two-hundred fifty persons. The widths of doorways, passages, stairways, ramps, or other required means of emergency exit from rooms in buildings referred to in section 58-20 shall be computed at the rate of not less than nine inches per one hundred persons capacity, and this minimum width shall be maintained by a cumulative increase toward the outside exit doors.

58-31. In every cell room and in every other room where inmates or prisoners are confined by locked doors, the doors of all such cells or rooms shall be provided with remote control of locks so that they may be promptly and effectively opened by an attendant in case of fire or other emergency.

58-32. All stairways in buildings included in section 58-20 shall meet the requirements of chapter 64 of this code. No stairway shall be less than three feet eight inches in width; provided, however, that stairways used only by guards, attendants, or other employes may be not less than three feet in width. Stairways shall be so located that on any floor the top riser of such stairway, if an open stairway, or the door to such stairway, if a closed stairway, shall be not more than seventy-five feet from the door to any room or cell.

58-33. Except as otherwise provided, every habitable room in buildings included in section 58-20 shall have one or more windows opening directly upon a public way, yard, or court. The total glass area of such window or windows shall be not less than ten per cent of the floor area of such room. The top of such windows shall be not less than seven feet above the floor; provided, however, that where cell blocks have windows on three sides of the same with a total glass area equal to twenty-five per cent of the floor area of such block, it shall not be required that each cell have a window.

58-34. Every means of exit shall have a system of electric lighting as required by chapter 66 of this code for the normal illumination of exits.

58-35. Standard exit signs, standard directional signs, and standard fire escape signs shall be provided in every building included in section 58-20 to mark the ways of egress as required by chapter 66 of this code for exit signs.

Stables

58-36. A stable is hereby defined as a building, or part of a building, designed, intended, or used for the housing or shelter of horses, cattle, or other animals.

58-37. Every stable housing more than eight animals and every stable with a floor area of more than five hundred square feet shall be located not less than four hundred feet from any school, church, hospital, public park, or public playground.

58-38. Stables shall be constructed of any of the types of construction described in chapter 67 of this code, subject to the restrictions as to area and story height provided in chapter 64 of this code. Every stable housing more than two animals on any lot abutting on a public way, in which a public sewer is constructed, shall have an impervious floor properly drained to such a sewer.

58-39. Every stable having a floor area of more than forty-five hundred square feet, shall have an enclosure of not less than one hour fire-resistive construction for any space used for the storage of hay, straw, or combustible bedding.

58-40. In every stable with an area of more than nine thousand square feet, there shall be two or more pedestrian exit doorways. Exit doorways shall be at opposite sides or ends of the building, and no point in any stable shall be more distant from any exit doorway than one hundred fifty feet measured along the line of travel. Stables with stories above or below the first story shall have two or more ramps or stairways to the ground leading directly to each required exit doorway; provided, however, that one such exit stairway may be a fire escape stairway.

58-41. Artificial lighting shall be restricted to electricity in every stable inside the fire limits.

Fire Stations

58-42. A fire station is hereby defined as a building, or part of a building, designed, intended, or used as a place for the housing of one or more pieces of fire-fighting or salvaging equipment together with the sleeping quarters, locker rooms, toilet and bath rooms, heating plant, and such other rooms or spaces as are required by the firemen or the equipment.

58-43. Fire stations shall be built of ordinary construction or of more fire-resistive construction; provided, however, that the ground floor shall be of non-combustible material, and where there is a basement, such story and the floor above the basement shall be of fireproof construction. Fire stations more than three stories in height shall be of fireproof construction.

58-44. A fire station may occupy a part of any building used as a business unit or as a garage, as described in chapters 50 and 52 of this code, respectively, or any building used as a police station; provided, however, that such fire station shall be separated from every other part of such building by two hour fire-resistive construction.

58-45. Every fire station shall have not less than one pedestrian exit doorway in addition to the vehicle exit doorway. Every fire station more than one story high shall have one or more stairways from the top floor to the ground.

58-46. Every habitable room used for living or sleeping purposes or dining purposes in a fire station shall have a window or windows with ventilating openings having an area of not less than five per cent of the floor area of such room.

Incinerators

58-47. An incinerator is hereby defined as a furnace for the burning of garbage, rubbish, or other waste substance, with or without fuel.

58-48. Incinerators shall not be built within any hazardous use unit having flammable liquids, vapors, or flammable dust.

58-49. Incinerators shall be divided into two types, non-fuel-fired incinerators and fuel-fired incinerators, as hereinafter provided.

58-50. In this type shall be included all incinerators which use no fuel for combustion other than the normal refuse deposited; provided, however, that a gas flame or other means may be provided to accomplish primary ignition, and the incinerator flue and the smoke flue shall be one.

58-51. Where the horizontal grate area does not exceed nine square feet, the walls of the combustion chamber shall be constructed of common brick work not less than three and three-fourths inches thick with a lining of fire brick not less than four and one-half inches thick. Where the horizontal grate area exceeds nine square feet, the walls of the combustion chamber shall be constructed of common brick work not less than eight inches thick with a lining of fire brick not less than four and one-half inches thick. Fire brick shall be laid in fire clay mortar.

58-52. The chimney shall be built as provided by chapter 76 of this code. For incinerators having not more than one service opening, the flues shall have a diameter or side of not less than eleven and one-fourth inches. For incinerators in buildings not more than six stories in height, with not more than twelve service openings, the flues shall have a diameter or side of not less than fifteen and three-fourths inches. For incinerators in buildings more than six stories in height, the flues shall have a diameter or side of not less than seventeen and one-fourth inches. The top of every incinerator chimney shall be provided with a spark arrester having a heavy wire mesh not exceeding one inch mesh.

58-53. The area in the clear of any one service opening shall not exceed one-third of the cross-sectional area of the flue. Every service opening into an incinerator flue shall be provided with a charging device firmly built into the masonry in such manner that no part shall project beyond the inner surface of the flue. Such charging device shall be self-closing and shall be so designed that the opening to the flue interior shall be closed off during the charging operation.

58-54. In this type shall be included all incinerators which are equipped with fuel combustion chambers.

58-55. Incinerators of this type shall be located in separate rooms, except that refuse material bins or containers may also be kept in such room; provided, however, that any material bin which is the terminal for a chute shall not be in the same room with the incinerator; and provided further that an incinerator may be located in the same room with boilers or other equipment comprising the building heating plant. The incinerator room or the boiler room in which an incinerator is located, shall be separated from the rest of the building by not less than two hour fire-resistive construction.

58-56. Every fuel-fired incinerator shall be designed with special regard for the stresses set up by high temperatures. Incinerator combustion chambers, designed to burn not more than two-hundred-fifty pounds of refuse per hour, shall be constructed of common brickwork not less than eight inches thick with a lining of fire brick not less than four and one-half inches thick; provided, however, that a steel plate casing not less than three-sixteenths inch thick may be substituted for four inches of common brickwork. Incinerator combustion chambers designed to burn more than two-hundred fifty pounds of refuse per hour shall be constructed of common brickwork not less than eight inches thick with a lining of fire brick not less than nine inches thick; provided, however, that a steel plate casing not less than three-sixteenths inch thick may be substituted for four inches of common brickwork. Fire brick shall be laid in fire clay mortar.

58-57. The chimney of a fuel-fired incinerator shall be built as provided by chapter 76 of this code. An incinerator breeching may be connected to a heating boiler chimney or other chimney, if the area of the chimney is not less than four times the area of the incinerator breeching.

58-58. Refuse chutes shall rest upon substantial brick or concrete foundations. Walls of chutes shall be of solid brickwork not less than eight inches thick or of reinforced concrete not less than six inches thick. Chutes shall extend through the roof and shall be covered with metal skylights glazed with unwired glass, except where a metal ventilator is provided. Each service opening in a refuse chute shall be protected with a self-closing forty-five minute fire-resistive door. Every such service opening shall be located in a separate room or compartment with walls of one hour fire-resistive construction. Chutes shall terminate or discharge into a room other than the room in which the incinerator is located. Such terminal room shall have an enclosure of not less than two hour fire-resistive construction with openings protected with self-closing forty-five minute fire-resistive doors.

Sheds and Shelter Sheds

58-59. A shelter shed shall be defined as a structure having a roof and with more than fifty per cent of the area of its sides open.

A shed shall be defined as a structure not exceeding three hundred square feet ground area and not to exceed fourteen feet in height above grade to the highest point thereof with a roof covering of fire-retarding material and enclosing walls of combustible material, no part of which is located on the front half of any lot. No part of such shed shall be used as a dwelling, or as an addition to any dwelling, or for any business purpose.

58-60. Except as otherwise provided, shelter sheds of wood frame construction, eight hundred square feet or less in area, may be erected within the fire limits or provisional fire limits; provided, however, they shall have roofing of non-combustible material, no part of the building shall be more than fifteen feet above grade, and the floors shall be of non-combustible material or of planks not less than one and five-eighths inch thick laid directly on the ground. Any shelter shed having an area of more than eight hundred square feet and not exceeding sixteen hundred square feet, if within the fire limits, shall be located not less than twenty-five feet from any other structure on the same lot, or any lot line. Enclosing walls, if any, shall be of non-combustible material. Shelter sheds shall be erected only on the rear of the lot, and not more than one such shelter shed eight hundred square feet or less in area shall be erected on any lot of thirty feet or less in width.

58-61. Except as otherwise provided, shelter sheds of wood frame construction, built as provided in section 58-60, and twenty-eight hundred square feet or less in area, may be erected outside the fire limits or provisional fire limits. Any shelter shed having an area of more than twenty-eight hundred square feet, and not exceeding four thousand square feet in area, shall be located not less than twenty feet from any lot line or other structure or building, and enclosing walls, if any, shall be of non-combustible material.

58-62. Except as otherwise provided, shelter sheds of wood frame construction, to be used for the storage or handling of coal, brick, lumber, stone, cement, salt, or similar commodities which are non-combustible, or for the icing of cars, may be erected within or without the fire limits, upon, along, or adjacent to any railroad tracks or navigable waters. Such shelter sheds shall not exceed nine thousand square feet in area. If within the fire limits or provisional fire limits, such shelter sheds of wood frame construction shall not exceed thirty-five feet in height, and if outside the fire limits shall not exceed forty-five feet in height. Such shelter sheds shall be located not less than twenty-five feet from any property dividing lot lines and from any other building.

Ice Houses

58-63. An ice house shall be defined as a building used exclusively for the storage of ice.

58-64. Except as otherwise provided, ice houses of wood frame construction, having fire-retarding roof covering, and not exceeding nine thousand square feet in area, may be erected within the fire limits or provisional fire limits. Such ice houses shall be not less than twenty-five feet from any property dividing lot lines and from any other building. Such ice houses shall have walls enclosed with an eight inch thick envelope of brick, hollow tile, concrete, or other non-combustible material or foundations extending to solid ground and not less than four feet below the surface of the ground. Such ice houses shall be not more than forty-five feet in height.

58-65. Except as otherwise provided, ice houses of wood frame construction having fire-retarding roof covering, and not exceeding twenty thousand square feet in area, may be erected outside the fire limits or provisional fire limits, upon, along, or adjacent to any railroad tracks or navigable waters. Such ice houses shall be located not less than one hundred feet from any property dividing lot lines and from any other building, and shall be not more than forty-five feet in height. Ice houses larger than twenty thousand square feet may be built in accordance with this section; provided, however, that such building shall be divided by fire division walls into units of area not greater than twenty thousand square feet. Except as otherwise provided, ice houses of wood frame construction, having fire-retarding roof coverings, and not exceeding eighty thousand square feet in area, may be erected outside the fire limits or provisional fire limits contiguous to any lake or other body of water where ice may be harvested. Such ice houses, and such other building or buildings as are used in connection with the ice house, shall be not less than six hundred feet from any property dividing lot lines and from any other building. Such ice houses shall be not more than forty-five feet in height. Ice houses larger than eighty thousand square feet in area may be built in accordance with this section; provided, however, that such building shall be divided by solid walls of masonry into units of area not greater than eighty thousand square feet.

Billboards and Signboards

58-66. *Billboard.* A billboard is hereby defined as a structure with a vertical or nearly vertical surface, erected for the outdoor display of posters.

Signboards. A signboard is hereby defined as a structure with a vertical or nearly vertical surface, erected for the display of notices of any kind, other than posters.

Exceptions. The faces of the walls of the flat surface of the roof of a building or other structure, used for the display of posters or other notices, shall not be interpreted as a billboard or signboard.

58-67. Billboards and signboards together with all supports and connections shall be constructed and maintained to withstand a wind pressure of not less than twenty-five pounds per square foot of surface area without stressing the supporting members beyond the safe limit of stresses provided in the structural provisions of this code pertaining to buildings.

Billboards and signboards shall be built entirely of non-combustible materials, except as otherwise provided by section 58-70; provided, however, that billboards and signboards more than ten feet from the nearest building or other structure, or from any thoroughfare or other public space, may have stringers, uprights, and braces of wood.

58-68. Except as otherwise provided, the faces of billboards and signboards shall not exceed twelve feet in height.

The height of the top of any billboard or signboard shall not exceed fifteen feet six inches above the level of the adjoining street level or above the adjoining ground level if such ground level is above the street level.

58-69. The bottom of the face of any billboard or signboard shall have an open unobstructed space thereunder not less than three feet six inches above the level of the adjoining street level, or above the adjoining ground level, if such ground level is above the street level, and if erected on the ground shall be located not less than ten feet from any building or other structure or from any public way or other public place.

58-70. Billboards or signboards used exclusively to advertise the sale or lease of the property upon which they are erected, and having an area not exceeding twenty-four square feet, may be built entirely of wood or other combustible material; provided, however, that if attached to a building or other structure, they shall be fastened flat against the wall surface, and if erected on the ground shall be located not less than ten feet from any building or other structure or from any thoroughfare or other public place.

58-71. No material alteration of any billboard or signboard, nor removal from one location to another, shall be made except upon a written permit issued by the commissioner of buildings authorizing such alteration or removal. Such permit shall be issued upon application in writing made to said commissioner by the owner of such billboard or signboard, or by the person in charge, possession, or control thereof, accompanied by a plan of the proposed alterations or repairs to be made and a written statement covering the proposed removal from one location to another and its reconstruction in the new location, which said alteration and repairs or removal shall be made in accordance with the provisions of this code. Where such plans, specifications, and location are in compliance with the requirements of this part of this chapter dealing therewith, such commissioner shall issue a permit upon the payment of a fee therefor as fixed in section 43-31; but such alteration shall not be construed to apply to the changing of any advertising matter of any billboard or signboard, nor the refacing of the framework supporting the same.

58-72. Every billboard and signboard shall bear on the top of such structure the name of the owner.

Illuminated and Other Roof Signs

58-73. An illuminated or other roof sign is defined as any structure erected upon or above the roof of any building or other structure for the display of notices of any kind, which may have all or any part of the letters of such notices flush or raised or in outline of incandescent lamps or other lights, or which may have a border of light, and all signs erected upon or above the roof of any building or structure shall comply with the requirements of this chapter dealing with illuminated and other roof signs and with exposed metal structures.

58-74. Structures included under section 58-73 shall be skeleton construction of steel, or a superior type of construction, designed and constructed to withstand a wind pressure of not less than thirty pounds per square foot. Steel or other metal shall be used for the face of the sign and shall be so designed that the area of any surface presented to the wind shall not exceed fifty per cent of the aggregate area of the surface on which the notice is placed. No material shall be used in any sign included under section 58-73 which is more combustible than metal, except such material as may be required for insulating wires and conductors, and except that wood structural members, with a cross-sectional area of not less than fifty-two square inches, may be used at the roof or wall surfaces for purposes of securing the steel framework.

58-75. The total height of any structure included under section 58-73 shall not exceed sixty feet above the roof.

58-76. The bottom of the face of any structure included under section 58-73 shall have a clear unobstructed space of not less than five feet between such structure and any roof. The face of any structure included under section 58-73 shall be located not less than six feet back of the face of any street front wall.

58-77. Every structure included under section 58-73 shall bear on the top of such structure the name of the owner.

58-78. Permission and authority granted under the preceding sections of this chapter dealing with illuminated and other roof signs may be revoked for cause by the commissioner of buildings. In case of such revocation, all such electrical signs shall be removed at the expense of the owner of the building, or the person who is then maintaining the same, without any cost or expense of any kind whatsoever to the city; provided, however, that in the event of failure, neglect, or refusal on the part of the owner of the building or structure upon which said illuminated electric sign is constructed, or the person operating and maintaining said electric sign to remove it upon the revocation of the permit by the commissioner of buildings, as herein provided, the commissioner of buildings may proceed to remove the same and charge the expense thereof to the owner of the building or structure upon which said illuminated electric sign is constructed, or to the person operating or maintaining it.

Fences

58-79. A fence is hereby defined as a structure forming a barrier, which is not otherwise a part of any building or structure which may be lawfully erected.

58-80. Every fence shall be designed and constructed to resist a horizontal wind pressure of not less than twice that required for buildings. Where the distance from the lot line to the face of any fence is less than the height of the fence, such fence shall have lateral supports on one side with structural braces extending to the top of the fence; provided, however, that any free standing masonry wall or masonry sections in any fence shall comply with the provisions of chapter 73 of this code.

58-81. A fence of any material, parallel to a street lot line, alley lot line, or any dividing line, and within eight feet of such lot line, shall not exceed eight feet in height above the established grade or above the ground where no grade has been established; provided, however, that any such fence which does not obstruct vision to an extent greater than fifty per cent of the aggregate vertical surface area of such fence, including openings, shall be exempt from the provisions of this section, except that any fence constructed in whole or in part of wood shall not exceed eight feet in height.

Roundhouses and Carbarns

58-82. A roundhouse is hereby defined as a structure for the storing and repairing of locomotives using any fuel other than a volatile flammable liquid.

A carbarn is hereby defined as a structure for the storing and repairing of electric street cars and other electric conveyances.

58-83. Every roundhouse and carbarn shall have all enclosing walls and all floors and pits of non-combustible materials. Roofs and columns supporting roofs shall be of heavy timber construction or of more fire-resistive construction. Roof coverings shall be of fire-retarding material.

58-84. Every roundhouse shall be divided by standard fire division walls from any space used for the storage of combustible fuel or materials. Every carbarn shall be divided by standard fire division walls into fire areas not exceeding thirty thousand square feet; provided, however, that fireproof carbarns not more than one story in height may be of any area.

58-85. Every roundhouse and every carbarn shall have pedestrian exit doorways so located that any point on any floor shall be not more than one hundred feet from one such exit doorway.

Tanks

58-86. It shall be unlawful to construct, maintain, allow, or permit to remain in, upon, or above the roof of any building, any tank of a larger capacity than two hundred fifty gallons unless such tank shall be supported upon a foundation or structure of masonry, reinforced concrete, structural steel, or any combination thereof, which shall be designed to meet the requirements of the structural provisions of this code pertaining to buildings.

Exposed Metal Structures

58-87. It shall be the duty of the owner or person in charge, possession, or control of any building upon or above which any unprotected metal structure, including tank and sign structures, canopies, and smoke stacks, are now located or shall be erected to maintain such structures in good and safe condition. Any exposed tank of larger capacity than two hundred fifty gallons shall have a rust-proof plate or tag attached to such tank or its supports, which shall show in letters or figures at least two inches high, the month and year when such tank was installed.

58-88. Within two years after the erection of any exposed metal structure, permitted by this code upon or above the roof of any building, and within two years following July 13th, 1938, and at least once every five years thereafter, every such exposed metal structure now existing or hereafter erected shall be subjected to a critical examination by a licensed architect or a licensed structural engineer, whom the owner shall hire, and a report of its condition by said architect or engineer made to the owner shall be submitted in duplicate by the owner to the commissioner of buildings. One copy of such report, if satisfactory to the commissioner of buildings, shall be returned to the owner, bearing the approval stamp of the commissioner of buildings.

58-89. Every such structure found to be in an unsafe condition or in need of repair or reinforcement shall be subject to notice by the commissioner of buildings to the owner or person in charge, possession, or control of the building whereon such structure is located, immediately to effect such repairs, reinforcement, or precautionary measure as will bring the premises in a good and safe condition, and further, without delay, to begin and complete the work of permanent repair, reinforcement, or removal, which shall be required to make such structure conform to the building provisions of this code.

58-90. For the purposes of the foregoing sections dealing with exposed metal structures, no form of paint, galvanizing, or similar coating shall be considered as a protection exempting otherwise unprotected metal structures from the provisions thereof.

Violation of Chapter Provisions

58-91. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided by this section.

CHAPTER 59

FRONTAGE CONSENTS

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59-1. Whenever a provision is made in this code that frontage consents shall be obtained for the construction, alteration, or enlargement of any building or structure in any block, the word "block", so used, shall not be held to mean a square, but shall be held to embrace only that part of a street bounding the square which lies between the two nearest intersecting streets, one on either side of the point at which such building or structure is to be constructed, altered, or enlarged, unless it shall be otherwise specifically provided.

In determining whether the buildings on both sides of the street are used exclusively for residence purposes, any building fronting upon another street and located upon a corner lot shall not be considered.

By "corner lot" is meant a lot situated at the junction of two streets or of a street and a public alley at least sixteen feet wide; provided, that if such alley be less than sixteen feet wide, and the lot be estimated on a line sixteen feet from the opposite side of the alley, such lot may be considered a corner lot. Any portion of the width of such lot distance more than fifty feet from such junction shall not be regarded as part of a corner lot, but shall be subject to the provisions of this code respecting other than corner lots. Where, in corner lots, the two frontages are of unequal length, the lesser street frontage shall be taken as the width of the lot. Street frontage alone, and not alley frontage, shall be considered in determining such lesser frontage.

59-2. Whenever frontage consents are required for the construction of a building or for any occupation for which a building is about to be constructed or altered, under any section of this code, such frontage consents shall be presented to the commissioner of buildings before the issuance of a permit for the erection or alteration of a building for such purposes, unless otherwise expressly provided.

59-3. No permit shall be issued for the construction or remodeling of any building in any block in which the use of buildings is restricted or regulated by the provisions of this code if such building is designed to be used for conducting therein any business or store, without first requiring the applicant for such permit to file with the commissioner of buildings a plat showing the use to which all the property in such block is devoted.

59-4. In all cases where an application for a permit is made for the construction of a new building in any square in which a majority of the buildings are used exclusively for residence purposes, or in a square on the opposite side of the street from such square so used for residential purposes, if there shall be filed with the commissioner of buildings a protest signed by not less than ten owners of property in such square so used for residential purposes, or in case the ownership of the frontage is in less than twenty persons then if signed by a majority of the owners according to frontage, the commissioner of buildings shall withhold the issuance of the permit until the city council shall have ordered a public hearing similar to that required in an act of the general assembly entitled "An Act to confer certain additional powers upon city councils in cities and presidents and boards of trustees and villages and incorporated towns concerning buildings and structures, the intensity of use of lot areas, the classification of trades. industries, buildings and structures with respect to location and regulations, the creation of districts of different classes, and the establishment of regulations and restrictions applicable thereto," in force June 28, 1921, as amended. For the purposes of this section a square shall be understood to be a plot of ground containing city lots surrounded by public ways, railway rights of way, natural boundaries, or public places.

59-5. No person shall locate or construct on any lot fronting on any street or alley in any block in which one-half of the buildings on both sides of the street are used exclusively for residence purposes, or within fifty feet of any such street, any building, structure or place used for the following purposes, without the written consent of a majority of the property owners according to frontage on both sides of such street or alley.

A gas reservoir, manufacture of gas, stock yards, slaughter house, packing house, smoke house or place where fish or meats are smoked or cured, soap factory, glue factory, size or gelatine factory, renderies, fertilizer factory, tannery, storing or scraping of raw hides or skins, lime kiln, cement or plaster of paris factory, oil cloth or linoleum factory, factory for the manufacture of rubber from the crude material, saw mill or planing mill, wood working establishment, starch factory, glucose or dextrine factory, textile factory, laundry run by machinery, factory combined with a foundry, iron or steel works, brass or copper works, sheet metal works, blacksmithing or horseshoeing shop, boiler making, foundry, smelter, metal refinery, machine shop, stone or monument works run by machinery, asphalt manufacture or refining, paint or varnish factory, oil or turpentine factory, printing ink factory, tar distillation or manufacture, tar roofing, tar paper or tarred fabric factory, ammonia, chlorine, or bleaching powder factory, celluloid factory, place for the distillation of wood or bones, lamp black factory, sulphurous acid, sulphuric acid, nitric or hydrochloric acid manufacture, factories or other manufacturing establisments using machinery or emitting offensive or noxious fumes, odors or noises, storage warehouses, storing or baling of junk or scrap paper or rags, shoddy manufacture or wool scouring, second hand store or yard, medical dispensary, or incineration or reduction of garbage, offal, dead animals or refuse.

59-6. No person shall construct or convert a building for the business of selling meats, poultry, fish, butter, cheese, lard, vegetables or any other provisions located in any block in which all the buildings are used exclusively for residence purposes, without first securing the written consent of three-fourths of the property owners according to frontage on both sides of the street in the block in which the building to be constructed or converted is located.

59-7. No person shall construct any building or structure designed or intended to be used for the purpose of presenting or carrying on therein any amusement for which a license is required by the provisions of this code without first obtaining the written consent of the property owners as required by section 59-5 of this code.

59-8. No person shall install any tank for the storage or sale of any of the liquids included in the definition of flammable liquids in section 51-2 in any lot or plot of ground without first obtaining the written consents of property owners representing the majority of the total frontage in feet of any lot or plot of ground lying wholly or in part within lines one hundred and fifty feet distant from and parallel to the boundaries of the lot or plot of ground upon which said tank is to be installed; provided, however, that for the purpose of this section only the frontage of any such lot or plot of ground or that part of the frontage of any part of such lot or plot of ground as comes within the one hundred and fifty foot limit herein prescribed shall be considered.

Whenever the lot or plot of ground in which such tank is to be installed is in any shape other than a rectangle the one hundred and fifty foot limiting line aforementioned shall not exceed in distance one hundred and fifty feet from any point in the boundaries of such lot or plot of ground.

All petitions containing such consents of property owners shall be based on and contain the legal description of the property affected.

No such tank shall be installed in any lot or plot of ground where any of the boundaries of such lot or plot of ground are within two hundred feet of the nearest boundary of any lot or plot of ground used for a school, hospital, church, or theater. Provided, however, that the provisions of this paragraph shall not apply to the installation of a tank containing any of the liquids mentioned in section 51-2 having a flash point above one hundred and sixty-five degrees Fahrenheit when such liquids are to be used for heating purposes in the building or buildings for which said tank is installed.

Frontage consents shall not be required for the installation of a tank containing any of the liquids mentioned in section 51-2 when such liquids are to be used for heating purposes in the building or buildings for which such tank is installed or when such liquids are to be stored or sold within a garage building in connection with and incidental to the garage business therein conducted or where such liquids are used in a manufacturing plant and are essential to the manufacturing business therein conducted; provided, however, that where such liquids having a flash point below one hundred and sixty-five degrees Fahrenheit are sold or offered for sale outside of a garage building or any other building frontage consents shall be required in accordance with this section.

59-9. No person shall locate or construct any garage within the territory bounded by the Chicago river on the north, by Halsted street on the west, by Lake Michigan on the east, and by Van Buren street on the south, any part of which is within eighty feet, or the entrance or exit to or from which, for the use of motor vehicles, is within one hundred and sixty feet of any portion of the street front of any building used as and for a hospital, church, or public or parochial school, or such entrance or exit of which is upon a street containing street car tracks and within one block of the entrance of a street railway tunnel, or which shall house, within said distance of one hundred and sixty feet of such street front, more than seventy-five cars.

It shall be unlawful to locate or construct any garage within two hundred feet of any building used as and for a hospital, church, or public or parochial school, or the grounds thereof, in any portion of the city outside of the territory above named.

Nor shall any person locate or construct any garage in the city, on any lot in any block in which dwelling houses, apartment houses, and hotels constitute one-half or more of the buildings on both sides of the street in the block, or within one hundred feet on any such street in any such block, without the written consent of a majority of the property owners according to frontage on both sides of the street; provided, that all lots which abut only on a public alley or court shall be considered as fronting on the street to which such alley or court leads. It shall not be deemed inconsistent with the character of a building as a dwelling house, apartment house, or hotel under this section that a part thereof is used for retail business purposes if a separate part of such building with a total floor area greater than the floor area used for business is used for residence purposes. In determining whether dwelling houses, apartment houses, and hotels constitute one-half or more of the buildings on both sides of the street in any block, any building fronting upon another street and located upon a corner lot shall not be considered. [Amend. Coun. J. 1-27-41, p. 4180.]

59-10. No person shall construct a home, as defined in section 136-1, in any block in which two-thirds of the buildings fronting on both sides of the street or streets on or along which the proposed home may face are devoted exclusively to residence purposes, unless the owners of a majority of the frontage in such block and the owners of a majority of the frontage on the opposite side or sides of the street or streets on or along which said building faces, consent in writing to the construction of any such home in such block. Such written consents of the majority of said property owners shall be filed with the board of health before a permit shall be granted for the constructing of any such home.

59-11. No person shall construct a hospital, as defined in section 137-1, in any block in which two-thirds of the buildings fronting on both sides of the street or streets on or along which the proposed hospital may face are devoted exclusively to residence purposes, unless the owners of a majority of the frontage in such block and the owners of a majority of the frontage on the opposite side or sides of the street or streets on or along which said building faces consent in writing to the construction of any such hospital in such block. Such written consents of the majority of said property owners shall be filed with the board of health before a permit shall be granted for the building or construction of any such hospital.

59-12. No person shall locate or construct any ice-making house or cooling plant, or any building used for the storage of ice, in any block in which two-thirds of the buildings fronting on both sides of the street on which the proposed plant shall be located are devoted exclusively to residence purposes, unless the owners of the majority of the frontage in said block on both sides of the street on which said plant is located shall consent in writing to the location or construction of such plant in such block. Any person violating any of the provisions of this section shall be fined not less than five dollars nor more than one hundred dollars for each offense, and a separate offense shall be regarded as having been committed for each day during which such violation shall continue.

59-13. No person shall locate or construct any automobile repair shop within two hundred feet of any building used as and for a hospital, church, or public or parochial school or the grounds thereof.

Nor shall any person locate or construct any automobile repair shop in the city on any lot in any block in which two-thirds of the buildings on both sides of the street are used exclusively for residence purposes, or within one hundred feet of any such street in any such block, without the written consent of a majority of the property owners according to frontage on both sides of the street; provided, that all lots which abut only on a public alley or court shall be considered as fronting on the street to which such alley or court leads.

59-14. No person shall locate or construct any automobile salesroom within two hundred feet of any building used as and for a hospital, church, or public or parochial school or the grounds thereof.

Nor shall any person locate or construct any automobile salesroom in the city on any lot in any block in which two-thirds of the buildings on both sides of the street are used exclusively for residence purposes, or within one hundred feet of any such street in any such block, without the written consent of a majority of the property owners according to frontage on both sides of the street; provided, that all lots which abut only on a public alley or court shall be considered as fronting on the street to which such alley or court leads.

The provisions of this section shall apply only where the premises are of such a nature that automobiles, autocars or any similar self-propelled vehicles are or may be admitted thereto.

59-15. No person shall construct any reformatory, rescue or sheltering institution in any block or square in which one-half of the buildings on both sides of the street or streets on which the proposed reformatory, rescue or sheltering institution or the grounds thereof may face are used exclusively for residence purposes, without the written consent of a majority of the property owners, according to frontage on both sides of the streets bounding such square.

59-16. No open shelter sheds to be used for the icing of cars or for the storage or handling of coal, brick, stone, cement, salt or other such commodities shall be built upon any lot or parcel of ground fronting upon any street within two hundred feet of any building used exclusively for residence purposes, unless the consent of the owners of the majority of the frontage on both sides of such street between the two nearest intersecting cross streets shall first have been obtained by the person desiring to erect and maintain such shed.

59-17. No person shall construct any building designed or intended to be used for the purpose of storing shavings, sawdust or excelsior therein within the city in any block in which one-half of the buildings fronting on both sides of the street on which the proposed building shall be located are devoted exclusively to residence purposes unless the owners of the majority of the frontage in such block on both sides of the street on which said building is located shall consent in writing to the construction of said building in such place.

59-18. No person shall construct any boarding, sales or private stable or barn for the stabling or keeping of horses on the front two-thirds of any lot on any street where one-half of the buildings on both sides of the street between the next nearest intersecting streets are used exclusively for residence purposes, without the written consent of a majority of the property owners according to frontage on both sides of the street.

No person shall construct any building or structure for the stabling or keeping of ten or more horses within a distance of four hundred feet from any school, church, hospital, public park or public playground.

59-19. No person shall erect or construct any billboard or signboard in any block on any public street in which one-half of the buildings on both sides of the street are used exclusively for residence purposes without first obtaining the consent in writing of the owners or duly authorized agents of said owners owning a majority of the frontage of the property on both sides of the street in the block in which such billboard or signboard is to be erected or constructed. Such written consents shall be filed with the commissioner of buildings before a permit shall be issued for the erection or construction of such billboard or signboard.

59-20. Every person desiring a permit for the construction of a grandstand, except in connection with such as are now in existence, shall first obtain the consent in writing of the owners of a majority of the frontage on both sides of the street or streets on each side of the block or square in which it is desired to erect such grandstand.

59-21. An applicant for a permit to erect temporary seating structures for shows and outdoor exhibitions and the observation of holidays and special occasions shall secure the written consent of a majority of the property owners, or their duly authorized agents, on both sides of the street on which said temporary seating structure is to be located, in the block between the two nearest intersecting streets before said permit shall be issued.

59-22. Any person violating any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 60

EXISTING BUILDINGS AND STRUCTURES

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60-1. An existing building or structure is hereby defined as a building or structure in existence on July 6, 1938.

Any work of construction, alteration, repair, or replacement under a permit issued by the department of buildings prior to July 6, 1938, may be completed in accordance with the terms of said permit and the ordinances relating thereto; provided, however, that such completion shall be made prior to the expiration of said permit and any legal renewal thereof. Any building or structure so constructed, altered, repaired, or replaced is hereby designated an existing building or structure.

60-2. Any part of an existing building or structure, except as otherwise provided in the occupancy chapters in the building provisions of this code, may be altered, repaired, or replaced with the material and in the forms permitted in the original structure thereof, or with materials, and in forms of construction of equal or greater strength and fire-resistance; provided, however, that the combined cost of alterations, repairs, and replacement during any period of thirty months shall not exceed fifty per cent of the cost of constructing a like building or an entirely new structure, at the site of the original structure, assuming such site to be cleared; and provided, further, that no building or structure shall be enlarged or increased in capacity or converted for any of the purposes of such units as are described in chapter 51 of this code, unless the entire building or structure shall be made to conform to the requirements in the building provisions of this code for new buildings and structures. Such combined cost shall be the cost of all alterations, repairs, and replacements made during the thirty month period, whether such alterations, repairs, and replacements are completed or not, and whether they are paid for or not. No other alteration, repair, or replacement shall be made on or in such an existing building, unless the entire building or structure shall be made to conform to the requirements in the building provisions of this code for new buildings and structures.

60-3. Before the issuance of a permit for the alteration, repair, or replacement of any part of an existing building or structure, the owner, the architect of engineer, and the contractor shall file with the commissioner of buildings, a joint affidavit or separate affidavits stating the estimated cost of the proposed alteration, repair, or replacement and the estimated cost of constructing the building or entirely new structure as provided in section 60-2; and stating further that such estimated costs are true and correct to the best of affiant's knowledge and belief. Said affidavit of the architect or engineer shall be accompanied by plans and details adequately illustrating the construction of the existing building or structure. Upon completion of the alteration, repair, or replacements covered by said permit. each of the aforesaid affiants shall file with the commissioner of buildings an affidavit or affidavits stating the actual cost of the alterations, repairs, or replacements made under the permit; and stating further that no rebate, discount, gratuity, or free service has been granted or received in connection with such alterations, repairs, or replacements, unless it be such a rebate, discount, gratuity, or free service as is regularly granted or received in connection with similar work in cases where no such affidavit is required.

60-4. Whenever an inspector of buildings shall report to the commissioner of buildings that any existing building or structure has inadequate or insufficient means of exit, by which shall be understood means of exit not complying with the ordinance under which such building was constructed or exits which have since been reduced or rendered inadequate by disproportionately increased capacity or by conversion to uses not originally contemplated, the commissioner of buildings shall so notify the owner, agent, or person in possession, charge, or control of such building or structure, and shall direct him forthwith to make such alterations and changes in the construction or equipment of such building or structure as are necessary in order to make such building or structure comply with the requirements in the building provisions of this code for exits. No exit or exit facilities in an existing building shall be reduced or decreased below the requirements in effect at the time when they were originally constructed. [Amend. Coun. J. 12-21-39, p. 1396.]

60-5. It shall be unlawful for any person to move any building from one location to another, unless the same shall be altered or reconstructed so as to conform to the provisions of this code governing the construction of such building in its new location at the time of moving the same.

60-6. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Each day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 61

GENERAL CONSTRUCTION PROVISIONS

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Construction Procedures

61-1. All scaffolds for use in the erection, repair, alteration or removal of buildings shall be so constructed as to insure the safety of persons working thereon, or passing under, or by the same, and to prevent the falling thereof, and the falling therefrom of any material that may be used, placed, or deposited thereon.

61-2. It shall be the duty of every owner or person, who shall have the supervision or control of the construction of or remodeling of any building having more than one framed floor, to provide and lay upon the upper side of the joists or girders, or both, of the first floor below the riveters and structural steel setters, a plank floor, which shall be laid to form a good and substantial temporary floor for the protection of the employes and all persons engaged above or below or on such temporary floor in such building. A permanent or temporary floor shall be in place on the joists or girders of the next lower floor, while a temporary or permanent floor of the next floor or roof is being placed.

61-3. In buildings more than one story high, where scaffolding is used on the outside of such buildings in the course of erection, the workers thereon shall be protected by a roof of planking set not more than one story's height above the floor of such scaffolding; provided, however, that such roof shall not be required if no workmen are employed above such scaffolding.

61-4. It shall be the duty of all owners, contractors, builders, or persons having the control or supervision of all buildings in course of erection, to see that all stairways, elevator openings, flues and all other openings in the floors shall be covered or properly protected, and it shall be their further duty to comply with an act of the legislature of the state of Illinois, entitled "An Act Providing for the Protection and Safety of Persons in or about the Construction, Repairing, Alteration or Removal of Buildings, Bridges, Viaducts and Other Structures, and to Provide for the Enforcement Thereof", approved June 3, 1907, and in force July 1, 1907.

61-5. The occupation of the street for the storage of building material for any one building or for temporary sidewalks shall never exceed one-third of the width of the roadway of the same, and in no event shall any material be stored or placed within four feet of any steam or street railway track, and in all cases where such obstruction of the street is made, there shall be a clear space of not less than one foot between such obstruction and the curb line; provided, however, that the commissioner of buildings and the commissioner of public works, or either of them, may limit or prohibit the storage of material on any street or alley where a tunnel, conduit, or any underground passage way or subway is located.

61-6. The extent of occupation of a sidewalk and street, to be covered by the terms of a permit for street obstruction or building, shall be as follows: Such permit shall not authorize the occupation of any sidewalk or street, or part thereof, other than that immediately in front of the lot or lots upon which any building is in process of erection and in relation to which such permit is issued. During the progress of building operation, a sidewalk not less than six feet in width shall be at all times kept open and unobstructed for the purpose of passage in front of such lot or lots. Such sidewalk shall, if there are excavations on either side of the same, be protected by substantial railings which shall be built and maintained thereon so long as excavations continue to exist. It is not intended hereby to prohibit the maintenance of a driveway for the delivery of material across such sidewalk from the curb line to the building site.

The permission to occupy streets and sidewalks for the purpose of building is intended only for use in connection with the actual erection, repair, alteration or removal of buildings, and shall terminate with the completion of such operation. It shall be unlawful to occupy any sidewalk or street after the completion of the operation for which a permit has been issued by the department of buildings. It shall also be unlawful to occupy a street or sidewalk, under the authority of such permit, for the storage of articles not intended for immediate use in connection with the operations for which such permit has been issued.

61-7. It shall be permitted for the purposes of delivering material to the basements of buildings in process of erection to erect elevated temporary sidewalks to a height of not exceeding four feet above the curb level of the street, and in case a sidewalk is so elevated it shall be provided with good substantial steps or easy inclines on both ends of the same and shall have railings on both sides thereof.

61-8. When buildings are erected of a height greater than three stories and such buildings are near the street line, there shall be built over the adjoining sidewalk a roof having a framework composed of supports and stringers of three inch by twelve inch timbers not more than four feet from center to center, covered by two layers of two inch plank. Such framework and covering shall be of such construction and design as shall support safely a live load of two hundred fifty pounds per square foot. Such roof shall be maintained as long as material is being used or handled on such street front above the level of the sidewalk. When additional stories are added to an existing building and such building is located near the street line, there shall be built over the sidewalk, at the point where the new stories commence, a scaffold not less than six feet wide, which shall form a covering over the sidewalk composed of a framework of stringers and supports, covered with two layers of two inch planks. Temporary sidewalks, their railings, approaches, and roofs over the same, shall be made with regard to ease of approach, strength, and safety as approved by the commissioner of buildings.

61-9. If the written consent of and a waiver of claims for damage against the city by the owners of properties adjoining the site of any proposed building is first obtained and filed with the commissioner of public works, the permission to occupy the roadway and the sidewalk may be extended beyond the limits of such building in front of the property for which the consent of the owner or lessee thereof has been secured, upon the same terms and conditions as those herein fixed for the occupation of sidewalk and street in front of the building site.

61-10. For all buildings more than four stories in height, the use of derricks set upon the sidewalk or street is prohibited. In no case shall the guy lines be less than fifteen feet over the roadbed.

61-11. Red lights shall be displayed and maintained during the whole of every night at each end of every pile of building material in any public way and at each end of every excavation.

61-12. It shall be unlawful for any person, in conducting any building operations between the hours of ten o'clock in the evening and six o'clock in the morning, to operate or use any pile drivers, steam shovels, pneumatic hammers, derricks, steam or electric hoists, or other apparatus, in any block in which more than one-half of the buildings on either side of the street are used for residence purposes.

Any person violating any of the provisions of this section shall be fined not less than five dollars nor more than one hundred dollars for each offense, and each day's violation of the same shall be considered a separate and distinct offense.

Placard Indicating Floor Strength

61-13. It shall be the duty of the owner, his agent, the occupant, or person in possession, charge or control of every building, now in existence or hereafter erected, which is or shall be designed, erected, altered or used for the purposes of the storage for sale, storage or manufacture of merchandise or for the purposes of a class 1 garage or of a stable or hangar having a ground area of more than eight hundred square feet, to affix and display conspicuously on each floor of such building, a placard stating the uniformly distributed load per square foot of floor surface, which may be safely applied as provided by the building provisions of this code and there shall be placards displayed to indicate the safe loading of each varying part of such floor. It shall be unlawful to load any floor, or any part thereof, to a greater extent than the loads indicated upon such placards.

61-14. The calculations and loads shall be made and determined in accordance with the structural provisions of this code pertaining to buildings.

61-15. It shall be the duty of the owner, his agent, the occupant, or person in possession, charge, or control of every building referred to in section 61-13, to procure and submit evidence of the correctness of the figures on such placards to the commissioner of buildings. Whenever such evidence shall be satisfactory to the commissioner of buildings, he shall approve such placards. Such placards so approved shall then be affixed as hereinbefore required.

61-16. Whenever it shall be found by the commissioner of buildings that any floor is incapable of bearing, in addition to the weight of the floor construction, partitions, permanent fixtures and mechanisms that may be upon the same, a live load of forty pounds for every square foot of surface, he shall condemn the same and order such floor to be repaired or reconstructed within a reasonable time by the owner or occupant thereof. In such case, it shall be unlawful for the owner or occupant to continue to use such building until the same floor shall be repaired or reconstructed in accordance with this section.

Heights of Buildings

61-17. In every building the story, having its floor nearest the grade and not more than one foot below the grade, shall be designated and known as the "first story", and as the "main exit story", the "main exit floor", or the "main exit level"; stories located above the first story shall be designated and known as "upper stories" and be distinguished from each other by number consecutively as the "second", "third" or "fourth" stories or floors and so on upward; and stories located below the first story shall be designated and known as "basements" and be distinguished from each other by letter alphabetically as "Basement A", "Basement B" or "Basement C" stories or floors, and so on downward; provided, however, that in any building which is located on ground adjoining an existing or proposed and authorized two level street, the story which is located between the upper and lower street levels shall be designated and known as the "ground" story or "ground floor"; the stories located above said ground story as the "first" or "second" stories or floors and so on upward; and the stories located below said ground story as "Basement A" or "Basement B" stories or floors and so on downward. Such a ground story shall not be considered a basement for the purposes of the building provisions of this code.

61-18. The height of any building shall not exceed the limit permitted by those chapters in the building provisions of this code dealing with specific occupancies except as otherwise provided in sections 61-19 and 61-20; provided, however, that this chapter shall not be construed as authorizing or permitting the erection of any building above the limits prescribed by the Chicago zoning ordinance.

61-19. The height of a building shall be measured to the average finished ceiling line of the topmost habitable story. The height shall be measured from the established grade along the street line upon which a building abuts, or, if such grade varies, from the average elevation of such grade. In the case of an existing or proposed and authorized two level street, the references of this section are to the upper level street.

61-20. Penthouses as provided in section 61-53 and spires, cupolas, domes, and similar architectural features as provided in section 61-55 may project above the height limits prescribed in section 61-18.

Enclosures for Wells

61-21. Every well in any building, except a building of wood frame construction, and except as otherwise provided in section 61-22, shall be enclosed in a vertical shaft; provided, however, that the requirements of this section shall not apply to a court or vent shaft open to the sky and meeting the requirements for a court or vent shaft as given elsewhere in the building provisions of this code. Enclosing walls required by this section shall be of not less than one hour fire-resistive construction in buildings of fireproof and semi-fireproof construction and shall be of two hour fire-resistive construction in buildings of heavy timber or ordinary construction. In all cases such enclosing walls shall be of reinforced concrete or shall be composed of units four inches or more in thickness of burned clay, Portland cement concrete, or solid partitions of Portland cement plaster and metal lath not less than two inches in thickness. Every opening in such a wall shall be protected as provided in section 61-24. Every enclosure required by this section shall be complete and continuous for its entire height. Where a vertical shaft passes through a structural floor of combustible material, the required enclosure shall be carried through the well so as to isolate completely the shaft from the floor construction and shall be supported independent of all combustible construction. No stairways shall be installed in the same shaft with an elevator or in any vertical shaft shared with any similar or other device. Ash chutes, incinerator flues and vertical shafts serving as chutes for waste materials shall conform to the requirements for chimneys.

61-22. No fire-resisting enclosure shall be required for a well in any of the following cases:

(a) A well for a sidewalk type elevator having a one-story travel, which is equipped with a trap door, or other closing member, of the strength and fire-resistive value equal to that required by this section for the floor or roof in which it occurs.

(b) A chase which is fire-stopped by required means at every floor or roof through which it penetrates.

(c) A roof scuttle or skylight, except between the roof soffit and any ceiling thereunder.

(d) A sleeve built solidly into floor, roof, or ceiling construction and having not more than one-half inch clearance around a pipe, conduit, or cable passing through it.

(e) A stairwell or other well-hold occurring in a space which has an enclosure such as is required for a vertical shaft.

(f) A well for an escalator which is not used in lieu of a required stairway; provided, however, that this exception shall apply only in buildings equipped throughout with a standard system of automatic sprinklers.

61-23. The enclosure of a vertical shaft may be less fire-resistive than required by section 61-21, but not less fire-resistive than metal studding with metal lath and plaster, if such shaft is located in a building of fireproof or semi-fireproof construction and conforms to either of the following cases:

A scuttle or skylight well hole extending from the ceiling immediately below the roof to a curb of non-combustible solid construction around the scuttle or skylight.

Between a manhole, hatch, trap, or other floor opening having a required closure and extending from the ceiling to the frame of the closure which shall be of non-combustible material.

61-24. Every opening into a vertical shaft, except in a building of wood frame construction, and except as otherwise provided in the building provisions of this code, shall be equipped with a closing member not less fire-resistive than a type A window or a forty-five minute fire-resistive door.

Hatchways for Elevators

61-25. Every hatchway for a passenger or freight elevator, except as otherwise permitted, shall be enclosed in a vertical shaft meeting the requirements of section 61-21 and the further requirements of the following sections of this chapter dealing therewith.

61-26. Hatchways for sidewalk type elevators, the travel of which does not exceed one story, shall be enclosed for the full height of such story except on the sides used for loading and unloading. They shall be enclosed from the door lintels to the ceiling on the open sides and the clearance between the enclosure and the car platform at such sides shall not exceed five inches. Enclosures shall be building walls, solid or latticed partitions, grillwork, metal grating, or expanded metal. Where wire grillwork is used, the wire shall be not less than No. 13 steel wire gauge and the mesh shall be not more than two inches. Where expanded metal is used, its thickness shall be not less than No. 13 U. S. gauge. The spacing between vertical bars shall be not more than one inch. Where the clearance between the enclosure and the car platform, counterweights or any sliding door, is less than one inch, the openings in the enclosure shall be covered with a netting of one-half inch square mesh of wire not smaller than No. 20 steel wire gauge. Such netting shall extend from the floor to a height not less than six feet above the floor.

61-27. Except interlocks, indicator and signal devices, all projections inward from the general surface of the hatchway enclosure and which are opposite a car entrance shall be beveled on the underside or shall be guarded with metal plates or wood faced with metal of not less thickness than No. 11 U. S. gauge. The angle of such bevels or guard plates shall be not less than sixty degrees. [Amend. Coun. J. 5-2-40, p. 2416.]

61-28. Windows shall be permitted only in exterior walls of hatchway enclosures. Windows in the enclosing walls of any elevator hatchway which are opposite any car entrance shall be provided with a grating or guard of vertical bars and the soffit of the recess formed by or between the vertical bars shall be beveled as hereinbefore required for other projections. Windows in hatchway enclosures less than seven floors above grade or less than three floors above an adjacent roof shall be fitted with metal guards having vertical bars not less than than five-eighths inch in diameter, spaced not more than ten inches apart.

61-29. No pipes conveying gases or liquids and no electric wires or cables shall be installed in any elevator or counterweight hatchway, except such cables as are required for the connections with the car.

61-30. Safe and convenient means of access shall be provided to every elevator machine room and pit. Permanent provisions for adequate artificial lighting shall be made in every pit and machine room. Machine rooms shall provide a clear headroom of not less than six feet. All elevator machinery shall be separated from adjoining rooms or spaces by walls, partitions, or substantial metal screens. [Amend. Coun. J. 5-2-40, p. 2416.]

61-31. The supporting beams for overhead machines shall be of steel or reinforced concrete. The total load on overhead beams shall be assumed as equal to the weight of all superimposed loads plus twice the weight of all suspended loads. For elevators with machines located over the hatchway, a non-combustible platform shall be provided at the top of the hatchway under all sheaves and other parts of machines, except secondary or deflector sheaves extending below the machine level. Such platforms shall be capable of sustaining a concentrated load of three hundred pounds on any four square inches of its area, a live load of one hundred pounds per square foot or a total live load equal to one hundred fifty per cent of the weight of the heaviest single unit or assembly of parts normally supported by the sheave or machine supports, if such total load exceeds a load of one hundred pounds per square foot over the entire area of such platform. The platform shall fill the entire hatchway when the cross-sectional area is fifty square feet or less; otherwise the platform shall extend not less than two feet beyond the general contour of the machines and to the entrance to the hatchway at or above the level of the platform. When such platform does not entirely cover the hatchway the open or exposed sides shall be adequately guarded. For elevators with machines not located over the hatchway, but having overhead sheaves located directly vertically over the cars, a non-combustible platform shall be provided under the sheaves at the top of the hatchway. Such platform shall either cover the entire hatchway or extend not less than two feet beyond the general contour of the sheaves and shall be capable of sustaining a load of three hundred pounds applied to any square area two feet on a side. If such platform does not cover the entire area of the hatchway, the open or exposed sides shall be adequately guarded. [Amend. Coun. J. 5-2-40, p. 2416.]

61-32. No heat actuated automatic fire door shall be installed on any landing opening in a passenger elevator hatchway. The maximum distance between the edge of a landing threshold and the hatchway side of a door shall be four inches. For automatic operation elevators the distance between the hatchway side of the landing door opposite the car opening and the hatchway edge of the landing threshold shall be not more than one-half inch for swinging doors and two and one-fourth inches for sliding doors. For existing installations of automatic operation elevators, where the clearance exceeds one and one-half inches for swinging doors or two and one-half inches for sliding doors, the space between the hatchway side of the landing door and the hatchway edge of the landing threshold door shall be filled in by suitable means. If the door slides in two or more sections, the specified dimension applies to that section which closes against the lock jamb. No hardware, except that required for interlocking, indicator, and signal devices, shall project into the hatchway beyond the line of the landing threshold. The lower edge of the interlocking devices shall be beveled. All hatchway doors shall be of not less than forty-five minute fire-resistive value, except that vision panels of clear wired glass, not more than one hundred forty-four square inches in area, may be provided in any hatchway door. Hatchway doors shall close the entire opening and shall be capable of withstanding a force of seventy-five pounds, applied at any point without being sprung from their guides. Where a one elevator hatchway extends through more than three stories without a landing opening, emergency doors not smaller than two feet six inches wide nor less than six feet six inches high, shall be provided at three story intervals. Such doors shall be self-closing and shall be operative only by a key from the outside of the hatchway. Hatchway covers for sidewalk type elevators shall be self-closing. [Amend. Coun. J. 5-2-40, p. 2416.]

61-33. Every elevator machine room, hatchway, and pit and every landing threshold shall be adequately lighted from an electrical source.

Guards to Prevent Falling

61-34. A guard to prevent persons from falling shall be provided at every point of danger, as required by sections dealing therewith.

61-35. Protection shall be afforded by guards, not less than three feet in height, at all edges of every balcony, mezzanine, space, or other floor or roof surface which is at a height of more than two feet above the floor, ground, or pavement directly below, or which is accessible from any doorway, or from any window having a sill two feet six inches or less above the floor inside of such opening. Protection shall be afforded by guards, not less than one foot six inches in height, at the edges of all other flat roofs except for one story buildings and single dwellings; provided, however, that buildings three stories or less in height with flat roofs and having no public access by stairway, fire escape, fixed ladder, doors, or windows shall not be required to have such guards.

61-36. A casement window or doorway having a sill two feet and six inches or less above the floor, ground or pavement, inside or outside of such opening, shall be protected by a guard not less than three feet in height unless such window or doorway opens directly upon such a guarded space as described in section 61-35, the level of which is two feet or less below the sill of such opening.

61-37. All sides of every open basement areaway except one giving access to a stairway, shall have guards three feet or more in height.

61-38. The guards required under the preceding sections of this chapter may be formed by walls, balustrades, grilles or railings. No portion of such a guard which is two feet six inches or less from the floor or ground, shall have any opening therein more than six inches wide. All required guards shall be designed to resist safely a force equivalent to a uniform horizontal pressure of two hundred pounds against every lineal foot of such guards, applied at a height of three feet above the ground level, pavement, or floor of the guarded area.

Exterior Openings

61-39. An opening in a wall shall be said to face a lot line, street or alley line, another wall or opening when the plane of the wall containing such openings makes an angle of sixty degrees or less with such line or with the plane of such another wall or opening.

61-40. In all exterior walls which are required to have a three or four hour fire-resistive value, except in single dwellings of any height and multiple dwellings of three stories or less in height; a forty-five minute fire-resistive door or a type A window shall be installed in every opening through a wall, where said opening faces an alley at a distance of less than twenty-four feet from the opposite side thereof; or where said opening faces a property dividing lot line at a distance of less than twelve feet; or where window openings or doorways of two or more areas of the same building, which are required by the building provisions of this code to be separated by a fire division wall, are located on a court and face each other at a distance of less than twenty-four feet; or where window openings or doorways of two or more areas of the same building which are required by the building provisions of this code to be separated by a fire-division wall, are located in planes forming an angle of one hundred fifty degrees or less, measured outside the building, and are separated from one another by a distance of less than nine feet; or where window openings or doorways of two or more areas of the same building which are required by the building provisions of this code to be separated by a fire-division wall, are located in the same plane or in planes forming an angle greater than one hundred fifty degrees, and are separated from one another by a distance of less than four feet six inches, or where the lowest point of said opening is less than forty feet directly above a roof on the same premises sheathed with wood or other combustible material, except as provided in chapter 63 of this code.

Roofs

61-41. Roofs shall be classified according to the slopes of their surfaces as follows:

(a) *Flat roof.* A roof, the plane of which forms an angle of fifteen degrees or less with the horizontal.

(b) *Medium pitched roof.* A roof, the plane of which forms an angle of more than fifteen degrees and not more than sixty degrees with the horizontal.

(c) *Steep roof.* A roof, the plane of which forms an angle of more than sixty degrees and not more than seventy-five degrees with the horizontal.

Any sloping enclosing surface of a building, the plane of which forms an angle of more than seventy-five degrees with the horizontal, shall not be considered to be a roof, but shall be classed as a wall; provided, however, that the exterior surface of a spire of any slope whatsoever shall be classed as a roof and not as a wall.

61-42. Roof coverings shall be classified as either fire-retarding or combustible. Every building within the fire limits, and every building other than a wood frame building located outside the fire limits, shall have a roof of fire-retarding material, except as otherwise provided in section 61-44 or elsewhere in the building provisions of this code.

61-43. The following roof covering materials are hereby designated as fire-retarding:

(a) Compositions of rag or asbestos felt with asphalt or coal tar pitch, with or without a coating of gravel, crushed rock, slate, or similar non-combustible material.

(b) Compressed asbestos and cement sheets.

(c) Compressed asbestos and cement shingles not less than one-eighth inch thick, laid over felt, saturated with asphalt or coal tar pitch.

(d) Slate.

(e) Burned clay title.

(f) Concrete tile.

(g) Any non-combustible composition tile.

(h) Any ferrous metal covering not less than one-fortieth inch thick.

(i) Any non-ferrous metal covering not less than one-sixty-fourth inch thick.

61-44. A wood shingle roof on a wood frame building not more than three stories and basement high, existing on July 6, 1938, may be repaired with wood shingles or other materials, whether such building is located within or without the fire limits. No wood shingles or other combustible material shall be used on a part of a wood frame building located within the fire limits which shall be increased in height or area.

61-45. Combustible or non-combustible insulating material shall be permitted between the required roof construction and the required roof covering in any type of construction.

61-46. All spaces between wooden sleepers or nailing strips on medium pitched or steep roofs or fireproof or semi-fireproof construction shall be filled solidly with non-combustible material.

61-47. Eaves and gutters on any building shall be not less fire-resistive than the roof surface required for such building, and it is further required that no combustible material shall be used in the eaves or gutters of any building more than fifty feet high.

61-48. The construction of every monitor shall be at least as fire-resistive as is required for the roof above which it is built. Every monitor which extends more than ten feet above the roof at any point shall be constructed entirely of non-combustible materials.

61-49. A scuttle for the purpose of providing a means of access for persons to a roof, shall have an opening not less than twenty-four inches by twenty-four inches, nor more than forty-eight inches by forty-eight inches in clear dimension. The curb of any scuttle or hatch shall be of not less fire-resistive construction than the roof on which it is located and the cover shall be not less fire-resistive than a wood core, metal clad door. Every required scuttle for the access of persons to a roof shall be without any lock, screw, or other fastening which will prevent any person from opening the cover from the inside at any time without a key or tool. Every cover of a roof scuttle or hatch shall be so fastened by hinges, chains, or other means, that it cannot be blown from the roof when in either an open or a closed position.

61-50. Every dormer shall be of the same construction throughout, as required for the roof from which it projects, or of other not less fire-resistive construction; provided, however, that in buildings of ordinary construction or a superior type of construction every dormer wall which in length exceeds fifty per cent of the length of the parallel wall in the story below shall be of masonry.

Annexes

61-51. Any school or public assembly unit may have appended to it a one story, or one story and basement structure used only for assembly, gymnasium, natatorium, or similar purposes, having a roof and non-combustible roof-supporting members, including columns, unprotected by fire-resistive material; provided, first, that the capacity of such appended structure shall not exceed one thousand five hundred persons; provided, second, that the under side of its principal roof-supporting girders or trusses shall be not less than twenty feet above the first floor; provided, third, that the roof sheathing, if of wood, shall be not less than two and five-eighths inches in one thickness; and provided, fourth, that such structure shall be separated from the remainder of the building by a solid masonry or reinforced concrete wall of not less than three hour fire-resistive construction, any openings in which are protected by at least sixty minute fire-resistive doors.

Penthouses

61-52. A penthouse is hereby defined as an enclosed space, located on a roof and used or designed for the housing of a stairway or of equipment used in the operation of the building, such as tanks, fans, or elevator machinery, but not including spires, cupolas, domes, or similar architectural features housing only clocks, bells, chimes, or lights.

61-53. A penthouse, or group of penthouses, constructed within the height and area limitations of this section, and meeting the construction requirements of section 61-54, may be built upon the roof of any building. A penthouse so constructed shall not be considered in measuring the height of the building in accordance with section 61-19. The area occupied by such a penthouse or group of penthouses shall not exceed twenty-five per cent of the area of the roof on which located. A plane forming an angle of forty-five degrees with the horizontal shall be assumed to extend from each property dividing lot line of the premises at the allowable height for a main roof at such line and no part of any penthouse shall extend through or above such a plane; provided, however, that nothing in this section shall be construed to prevent the construction of spires, cupolas, domes, or similar architectural features to a greater height as provided in section 61-55.

61-54. A penthouse, constructed within the limitations provided in section 61-53, shall be constructed entirely of non-combustible materials; provided, however, that the roof of such a penthouse need not be more fire-resistive than is required for the main roof of the building on which it is located; and provided further, that where a penthouse is located on the roof surface less than fifty feet above grade, every portion of such penthouse which is nearer than three feet to a property dividing lot line shall have a wall not less fire-resistive than is required for the story immediately below the penthouse, and a roof not less fire-resistive than is required for the roof surface on which the penthouse is located.

Spires and Similar Architectural Features

61-55. Spires, cupolas, domes, and similar architectural features, designed solely for architectural effect, or for the support of or housing of clocks, bells, chimes, or lights and their operating mechanisms, and which provide no habitable rooms or spaces, may be built above the roof of a building and above the height limits prescribed in section 61-18, except as provided in the Chicago zoning ordinance. Access through such a feature for purposes of cleaning or repairing its exterior, and for the care or operation of the devices or mechanisms located therein or thereon, shall be permitted and shall not be considered as habitable use within the meaning of this section.

61-56. *Structural frame.* The structural frame of any spire, dome, or similar architectural feature, permitted under section 61-55, shall be of the same type of construction as required for the building supporting such feature.

Coverings. The entire exterior surface of such features shall be of non-combustible material forming a structural part of such features or shall be of fire-retarding material if applied over a structural covering. Wood sleepers for the attachment of surface materials, if used in connection with a structural frame of fireproof or semi-fireproof construction, shall be as required by section 61-46.

Acoustic Materials

61-57. Any material applied to a wall, ceiling, or other surface for the purposes of sound-deadening, sound absorption, or the prevention of reverberations, shall be known as an acoustic material. Any acoustic material may be used in buildings for the aforesaid purposes, subject to the requirements of the following sections of this chapter dealing therewith. Combustible acoustic material shall be applied directly to a non-combustible surface or to a ceiling of metal lath and plaster or to the members of heavy timber construction. Acoustic material and the support thereof when suspended, furred, or used as a non-required ceiling shall be of non-combustible material.

61-58. *Qualification tests.* Any acoustic material to be classed as non-combustible shall be capable of meeting all the requirements of the following tests:

(a) The material to be tested shall be not less than two hundred square inches in area.

(b) The material to be tested shall be firmly mounted in the same manner as used in attaching the acoustic material to walls, ceilings, or other surfaces in buildings.

(c) A thermo-couple shall be installed on the unexposed side of the material to be tested; said thermo-couple being located at the center of the area to be tested and in contact with the test material in a manner which will cause it to indicate the temperature of said test material.

(d) The material to be tested shall be exposed directly to the flame in a test furnace, and said material shall be maintained at a temperature of not less than twelve hundred degrees Fahrenheit for a period of not less than ten minutes.

(e) The material during the ten minute test period shall not support combustion nor carry flame or fire.

(f) The test specimen shall be removed from the furnace immediately upon conclusion of the prescribed fire test, and shall not carry flame or support combustion when so removed.

(g) Immediately after the test material is removed from the furnace, it shall be cooled in cold water, after which the test material shall not fall away from its support.

Qualification by proof of test. A certificate of the responsible executive of a reputable testing laboratory, stating that a material has been tested and found to comply with the requirements of this section, shall be accepted by the commissioner of buildings as proof that said material complies with the requirements of this section.

61-59. All acoustic material shall be securely attached to the wall, ceiling, or other surface by cement or by other non-combustible material, or may be nailed directly to heavy timber construction. Such cement, or other material, when heated, shall continue to hold the acoustic material in place. Non-combustible material may be supported by non-combustible furring strips.

Walls

61-60. All required and all non-required walls shall conform to the general provisions of this chapter, the special provisions of the chapter governing the particular class of occupancy of which such walls are a part and to the structural provisions of this code pertaining to buildings.

61-61. Wherever a fire-resistive value of one, two, three, or four hours is required, such wall shall conform to the provisions of chapter 68 of this code; provided, however, that such compliance shall not exempt such walls from any further requirements of the structural provisions of this code pertaining to buildings.

61-62. Standard fire division walls shall be constructed of masonry or reinforced concrete in accordance with the following provisions:

(a) Masonry shall be not less than twelve inches thick and shall be constructed of solid units with no hollow spaces between units.

(b) Reinforced concrete shall be not less than eight inches thick and shall have no hollow spaces.

(c) The wall shall extend from the foundation to the roof of the building and in a building of other than fireproof or semi-proof construction, shall be continued as a parapet wall to a height of not less than three feet above the roof; provided, however, that the wall may be offset at any point if the horizontal or inclined construction connecting the offset portions is of the same thickness and construction as required for the wall itself, and any structural member or members supporting any part of the wall or the connecting construction shall have a four hour fire-resistive value. In buildings of wood frame construction, such walls shall project horizontally through the enclosing walls of the building and project therefrom for a distance of not less than one foot.

(d) Any opening through the wall shall be protected with double standard fire doors. The combined width of openings in any one story in the wall shall not exceed twenty-five per cent of the length of the wall; provided, however, that where the building is equipped throughout with a standard system of automatic sprinklers, the combined width of openings in any one story shall not exceed fifty per cent of the length of the wall, except that one opening not more than five feet in width shall be allowed in any case. Any opening through offset portions of the wall shall have a closure which will furnish fire protection at least equal to that of double standard fire doors in a wall.

(e) Mortar used in standard fire division walls shall be as required under section 73-20 of this code for mortar 1, 2, 3, or 6.

61-63. In every building of other than fireproof or semi-fireproof construction, every exterior wall, except a street front wall, which is nearer than fifteen feet to a property dividing lot line, or nearer than twenty-four feet to the opposite side of an alley, shall have a parapet carried above the roof as hereinafter provided. Every parapet wall shall be of the same thickness and of the same fire-resistive value as the wall of the topmost story immediately beneath it. Every parapet wall shall extend at least three feet above the roof, measured at right angles to the roof surface; provided, however, that a parapet three feet or more from any dividing lot line shall extend at least two feet above the roof; and provided further that a parapet wall at a gable end of a medium pitched or steep roof need not extend more than one foot above the roof. Parapets shall not be required for any exterior wall which is covered by a roof surfaced with two inches of slate, clay tile or not less fire-resistive material laid in mortar; provided, however, that such roof extends at least fifteen feet inside of or at right angles to such wall.

61-64. Any exterior enclosing surface of a building, the plane of which forms an angle of more than seventy-five degrees with the horizontal, shall be classed as a wall and shall be subject to the requirements of exterior walls; provided, however, that an exterior enclosing surface, which is part of a street front of a building, or which is located more than fifteen feet from a property dividing lot line; or more than twenty-four feet from the opposite side of an alley; or which encloses an attic or similar space, not occupied as a place of human habitation, may be constructed as required for roofs.

61-65. In the parts of buildings of ordinary and wood frame construction used for dwelling purposes the interior finish of exterior walls shall consist of lathing with wood or metal lath, gypsum, compressed fiber or similar plaster base which shall receive a coat or coats of lime, gypsum or cement plaster not less than one-half inch in thickness measured from the face of the plaster base; or in lieu of said plaster base and plaster other material of equal total thickness and having equivalent fire resistance of not less than one-half hour rating and sanitation value equivalent to that afforded by a seamless unbroken continuous plaster surface and that has been tested, approved and accepted according to the requirements of sections 41-1 to 41-6 of this code may be used.

Standard Fire Separation

61-66. A standard fire separation shall consist of vertical or sloping roofs and horizontal or inclined floors or slabs of masonry or reinforced concrete, forming a complete separation between two parts of a building and meeting the following provisions:

(a) Masonry shall be not less than twelve inches thick of solid units with no hollow spaces between.

(b) Reinforced concrete shall be not less than eight inches thick and shall have no hollow space.

(c) Any structural members supporting such construction shall have a four hour fire-resistive value.

(d) Any opening through such separation shall have a closure equal in fire-resistive value to a double standard fire door.

Partitions

61-67. Partitions forming required separations of a specified fire-resistive value shall conform to the requirements of chapter 68 of this code.

61-68. In buildings of fireproof or semi-fireproof construction, all partitions shall be non-combustible; except that in business units only, any area of six hundred square feet or less enclosed by non-combustible walls or partitions, may be subdivided by partitions of wood or wood and glass.

61-69. In buildings of heavy timber construction every partition shall be of non-combustible material; provided that in business units only areas of four hundred square feet or less enclosed by such non-combustible partitions, may be subdivided as permitted for fireproof and semi-fireproof buildings.

61-70. In buildings of ordinary and wood frame construction solid or hollow partitions composed partially of combustible materials shall be permitted. In the parts of such buildings used for dwelling purposes partitions of wood studs shall be lathed with wood or metal lath or in lieu thereof a gypsum, compressed fiber or similar plaster base not less than three-eighths inch in thickness may be used, and to whichever is used shall be applied a coat or coats of lime, gypsum or cement plaster not less than one-half inch in thickness measured from the face of the lath or plaster base—five-eighths inch in the case of metal lath; or in lieu of said plaster base and plaster other material of equal total thickness and having a fire resistance value of not less than one-half hour rating and a sanitation value equivalent to that afforded by a seamless unbroken continuous plaster surface and that has been tested, approved and accepted according to the requirements of sections 41-1 to 41-6 of this code may be used.

61-71. Wherever separations of a specified fire-resistive value are required, such value shall be maintained throughout the story height and throughout any hollow spaces in the floor or ceiling construction by fire stops of material at least equal in fire-resistive value to the value required for such separations. Hollow partitions of wood studding shall have top and bottom plates in each story.

61-72. Buck frames for openings may be of wood. Wood studs may be used between bucks where the total distance across the adjacent bucks and the intervening space does not exceed one foot three inches.

Separation from Public Spaces Below Grade

61-73. The interior of any building which adjoins a subway or other space below grade not open to the sky, under public control and open to the public, shall be separated from such space by walls or floors of solid masonry or reinforced concrete not less than twelve inches thick.

61-74. Every opening through a wall, required by sections 61-73 to 61-77 shall be provided with double standard fire doors. The combined area of all such openings in any wall shall not exceed twenty-five per cent of the gross area of the wall. Every opening through a floor required by sections 61-73 to 61-77 shall be provided with a bulkhead, vestibule, or shaft of masonry or reinforced concrete not less than twelve inches thick and equipped with fire doors, as required for an opening in a wall.

61-75. No wall used in a separation required by sections 61-73 to 61-77 shall be located more than twenty feet back from the subway or other public space. Show window and display space may be located on the public side of such separating wall, but there shall be not more than one doorway into each show window space through such wall.

61-76. Any public vehicular passage, not open to the sky, shall be separated from the interior of any adjoining building as required for subways in sections 61-73 to 61-77.

61-77. Nothing in the preceding sections shall prevent the entire space underneath a building, or any portion of such space, or any passage through a building, from being used as right-of-way or switching space for railroads or public carriers; provided, however, that such space or passage shall not be designed nor used as a public thoroughfare, nor as a parking space for motor vehicles where such use is prohibited by other sections in the building provisions of this code; and provided further, that such space is separated from the interior and adjacent parts of the building as required by sections 61-73 to 61-77, inclusive, for subways.

Transformer Vaults

61-78. In every building, other than a manufacturing unit used exclusively for production or distribution of electrical energy, all electrical transformers, capacitors and static condensers, which contain oil and are required by other provisions of this code to have a fireproof enclosure, shall be housed in a room or vault meeting the provisions of the following sections of this chapter dealing therewith.

61-79. Transformer vaults entirely outside of any other building may be constructed of not less fire-resistive construction than semi-fireproof construction.

61-80. Transformer vaults contained in any building shall have enclosing walls, floors, and ceilings of three hour fire-resistive construction. Every door in every opening through such enclosure shall be a sixty minute fire-resistive door and every window shall be a type A window.

61-81. Every doorway in every transformer vault shall have a curb or sill of Portland cement concrete raised at least three inches above the floor and forming a basin of sufficient capacity to contain all of the oil contained in the largest transformer.

61-82. Every transformer vault shall have a clear ceiling height of not less than eight feet.

61-83. Every transformer vault shall be provided with an opening or openings to the outside air. Such opening shall be in area equivalent to one square inch for each four gallons of oil contained by all apparatus within said vault, but in no case less than one square foot in area. If such opening is by means of a duct through other rooms or spaces, said duct shall be constructed of or be enclosed by material having not less than two hour fire-resistive value. Said fire-resistive value shall be maintained for a distance not less than twenty feet above the vault ceiling and shall be of not less than one hour fire-resistive value in every other portion. These requirements shall not preclude the utilization, as such a means, of an exhaust duct of a ventilating system; provided said duct is constructed or enclosed as above required and provided further that said duct shall not connect with any supply or recirculation system. The required openings shall be maintained unimpeded throughout the length of all ducts and shall not be closed or restricted by dampers or otherwise. Nothing in this section shall be construed as authorizing any modification of the requirements of the general construction provisions for the enclosure of vertical shafts and for separations between occupancies

Rooms for Mechanical Equipment

61-84. *Low pressure plants.* Every room containing a furnace or boiler having a working pressure not to exceed ten pounds, in all buildings, except single dwellings, shall be enclosed in walls, partitions, and ceilings of not less than one hour fire-resistive value; provided, however, that where such rooms shall have no story over or above any portion of such rooms, the fire-resistive ceiling shall not be required unless otherwise provided for a specific occupancy. In any theater and in any building devoted to the purposes of a place of public assembly, such room and every room containing any refuse burner or incinerator shall be enclosed in two hour fire-resistive construction, with every doorway having a forty-five minute fire-resistive door and every window being a type A window.

High pressure plants. No boiler room or other room in which there shall be a heating plant having a working pressure of more than ten pounds shall be located under the auditorium of any theater or within a distance horizontally of less than twenty feet from such auditorium. Every such boiler room shall have an enclosure of not less than one hour fire-resistive value and in theaters and other buildings devoted to the purposes of a place of public assembly shall have enclosures of not less than two hour fire-resistive value with every doorway having a forty-five minute fire-resistive door and every window being a type A window.

61-85. All rooms for elevator or dumbwaiter machines which are not a part of the hatchway for such elevator or dumbwaiter shall have enclosures as provided for such rooms which are a part of such hatchway.

61-86. The plant of every direct mechanical system and the direct portion of every indirect mechanical system, which contains more than one hundred pounds of irritant refrigerant or fifty pounds of flammable refrigerant as classified under section 85-8 shall be enclosed in a room devoted to no other purpose, which room shall be separated from other parts of buildings by solid construction having a four hour fire-resistive value. Except as otherwise provided, there shall be no direct means of communication between such room and any other portion of a building. The entrance or exit of such rooms shall be located in an outside wall not a part of the enclosure of an exit court.

Construction of Porches

61-87. Porches, verandas, or porticos of combustible material, not more than three stories in height, and extending not more than fifty feet across the rear of buildings, may be combustible materials. A storm door enclosure, not more than two feet wider than the inner doorway, and projecting not more than four feet from the face of the building and not more than twelve feet high, may be of combustible materials.

61-88. Except as permitted in section 61-87, the enclosing walls and structural frame of every porch, veranda, or portico within the fire limits, shall be of non-combustible material.

61-89. On buildings more than three stories in height, porches, verandas, or porticos of non-combustible construction, which are continuous and extend more than fifty feet across the rear of buildings shall be divided into sections not more than fifty feet in extent by partitions of non-combustible materials.

Framing Around Chimneys

61-90. No structural members of any building or structure shall rest or be supported on the walls of any chimney or smoke flue or of any shaft or chute, required to be constructed or enclosed as required for chimneys. No combustible framing shall be placed nearer than two inches from the outside wall of such chimney enclosure nor closer than seven inches from the inside of any such flue, shaft, or chute.

61-91. No smoke pipe of an area greater than that of a six inch diameter round pipe shall be permitted to pass through a combustible partition. Where a smoke pipe of not greater area than that of a six inch diameter round pipe passes through a combustible partition, it shall be surrounded by a ventilated thimble of non-combusible material or by non-combustible material not less than four inches thick.

Cornices

61-92. No combustible material shall be used for any purpose in connection with cornices of buildings more than fifty feet in height.

61-93. Cornices of non-combustible materials shall be supported on non-combustible structural members secured to the walls or structural frame of the building and the walls shall maintain the required fire-resistive value the full height behind every cornice throughout their entire length.

61-94. A cornice may project into the public way a distance of twenty-four inches where all parts of a cornice of any building or structure are more than twelve feet above the inside grade of the sidewalk and in cases where the sidewalk grade varies, are more than twelve feet above the average or mean inside grade of the sidewalk, and where such cornice extends in whole or in part along the street frontage of a building, and where the return of such cornice, if any, along an alley wall is not longer than a distance equal to the width of the alley. For each additional one foot in height that such cornice is placed above the height of twelve feet as aforesaid up to the limits of height fixed by ordinance for the particular building of which such cornice is a part, such cornice may project into the public way an additional one-fourth inch, until the total projection has reached the maximum of four feet six inches where the width of the public way is less than sixty-six feet and to a maximum of five feet where the width of the public way is sixty-six feet or more. Provided, however, that no cornice, sign or other projected construction shall extend beyond any adjacent private property line. [Amend. Coun. J. 5-29-41, p. 4936.]

61-94.1. Horizontal belt courses, water tables and other horizontal architectural features, which do not add floor area to a building or structure and which extend in whole or in part along the street frontage of a building with a return, if any, around an alley wall not longer than a distance equal to the width of the alley, and where all parts of such horizontal belt courses, water tables and other horizontal architectural features are more than twelve feet above the inside grade of the sidewalk, may project into the public way a distance not to exceed eighteen inches. [Added. Coun. J. 5-29-41, p. 4936.]

Fireplaces

61-95. The provisions of the following sections of this chapter dealing with fireplaces shall apply to open recesses or fireplaces in chimneys wherein fire may be made of combustible material of any kind for domestic purposes, and shall not be construed as applying to any fireplace or hearth used for any commercial or manufacturing purpose or process.

61-96. The installation or operation of any fuel burning gas fired or electric mantel or fireplace is hereby prohibited unless such mantel or fireplace is provided with a chimney and is constructed in accordance with the building provisions of this code.

61-97. The floor or hearth of every fireplace shall be of brick, stone, burned clay, tile, Portland cement concrete, or a combination of such materials, not less than twenty inches in width, measured from the face of the chimney breast and extending not less than twelve inches beyond the jamb of the recess on each side thereof. Hearths shall be of minimum thickness of four inches and shall be supported on a fireproof floor slab or on brick trimmer arches. Wood centering for trimmer arches shall be removed after the masonry has thoroughly set.

61-98. The walls of fireplaces shall be not less than eight inches thick, if of solid burned clay units and not less than twelve inches thick if of stone or other hollow units. The faces of all such walls exposed to fire shall be lined with firebrick, soapstone, cast-iron or other suitably fire-resistive material. When lined with four inches of firebrick, such lining may be included in the required minimum thickness of walls. Mortar used shall be as required by the provisions of chapter 73 of this code.

61-99. No flue from any fireplace shall incline more than forty-five degrees from the vertical. Where the smoke flue ascends elsewhere than directly above the center line of the fireplace recess opening, the throat shall be gathered together with its outlet directly on such center line and any necessary offsets shall be affected only above the throat outlet. Smoke flues shall provide a minimum cross-sectional area equal to one-tenth the area of the fireplace recess opening, and any damper or dampers used in the throat, shall not reduce such required flue area when in the opened position, nor provide less free opening than the required flue area.

61-100. The construction of flues and chimneys for fireplaces, including ash chutes and pits, shall be as provided in chapter 76 of this code.

Protection Against Corrosion

61-101. All structural steel and iron members, supporting exterior walls of any building, which are to be encased in a covering other than concrete, shall first receive a coat of mortar at least one-half inch thick. Said mortar coat shall be of No. 1 mortar, as described in chapter 73 of this code, and shall be applied directly to such metal members. All spaces between any fire-resistive covering and such protected metal members shall be filled solidly with mortar.

61-102. All interior structural steel and iron members, which are not to be encased in concrete shall receive two coats of a rust preventative paint, at least one of which shall be applied after erection; provided, however, that surfaces inaccessible for painting after erection, shall be given two shop coats of paint. All trussed steel joist and steel floors and decks shall receive two coats of rust preventative paint. All abrasions of the paint coating incurred during erection, shall be retouched after erection.

Violation of Chapter Provisions

61-103. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 62

ROOM SIZES AND FIRE AREAS

Capacity
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Capacity

62-1. Except as otherwise provided, the capacity of any room or space shall be determined in accordance with the following sections of this chapter dealing therewith.

62-2. The capacity of every room or space equipped with fixed seats having arms or other positive divisions between sittings over the entire floor area, except for the required aisles and spaces between rows, shall be in number of persons equivalent to the number of such fixed seats. Where the fixed seats or benches are without arms or other positive divisions, the capacity of such room or space shall be in number of persons equivalent to the number of sittings, one foot six inches wide provided by such undivided seats.

62-3. The capacity of every room or space not equipped with fixed seats and of such portions of rooms or spaces not occupied by fixed seats or by the required aisles and spaces between rows of such fixed seats shall be in number of persons equivalent to the quotient obtained by dividing the area of such room or space in square feet by the lowest divisor given in the following table for the respective purposes of use for which such room or space or portion thereof is designed, erected, altered, converted, or used:

Purpose of Use	Remarks	Divisor
Armory or rink	Drilling, playing, or skating space	10
Armory or rink	Other assembly space	6
Art rooms, draughting rooms, and libraries		25
Band or orchestra rooms		25
Billiards and pool rooms		25
Bowling rooms—not including area of alleys		12
Cafeterias	Seating space only	12
Circus	Exhibition space	10
	Other assembly space	6
Class and study rooms		18
Cooking rooms, serving rooms, and laboratories		30
Dance floors		10
Eating rooms		12
Gymnasiums	In public schools—Playing space	50
	Other assembly space	5
	In other buildings, entire space	10
Halls, meeting rooms		6
Lodge rooms		10
Lecture rooms	In public schools not more than 1500 sq. ft.	10
Locker rooms		15
Manufacturing		100
Museum rooms		10
Natatoriums	Including pool area	15
Office and financial		100
Except banking rooms		50
Promenades		20

Reading rooms		25
General stores and sales units	Main floor and basement	30
	Upper floors	60
Stages and platforms		6
Storage rooms		100
Trading rooms in stock and produce exchanges		5
Waiting rooms and lounges		15
Except permitted standing spaces		4

[Amend. Coun. J. 11-6-40, p. 3433.]

62-4. For the purposes of determining the capacity of a building, floor, room or space, the net area shall be assumed to be the floor area, as defined in section 40-1 of this code; provided, however, that lobbies, in closed corridors and other enclosed means of exit and toilet rooms shall not be included.

62-5. Wherever a given ceiling height or a given volume is required for any room by the building provisions of this code, beams or ducts shall be permitted to project not more than twelve inches below the plane of such required ceiling height and the volume of such projections shall be included in the required volume of the room; provided, however, that no such projection shall be located at less than seven feet above the floor, nor occupy more than twenty-five per cent of the area of the ceiling.

Fire Division Areas

62-6. A fire division area is hereby defined as an area within a building separated from every other area in the same story by a standard fire division wall or walls meeting the requirements of section 61-62 of this code.

62-7. No fire division area in a building not equipped with a standard system of automatic sprinklers shall exceed the area given in the following two tables for the occupancy use and construction type of such building:

Maximum Allowable Floor Areas in One-Story Buildings Not Equipped with Automatic Sprinklers

Class of occupancy	Fire-proof const. Sq. ft.	Semi-fire-proof const. Sq. ft.	Heavy timber const. Sq. ft.	Ordinary const. Sq. ft.	Wood frame const. Sq. ft.
Single dwellings	U	U	U	U	U
Multiple dwellings	U	U	*	*	*
Institutional buildings	U	U	10,000	10,000	O
Office units	U	U	UK*	UK*	400 L 1,250 N
Sales units	U	U	UK*	UK*	400 L 1,250 N
Financial units	U	U	UK*	UK*	400 L 1,250 N
Storage units	*	*	*	*	400 L 5,000 N
Manufacturing units	*	*	*	*	400 L 5,000 N
Hazardous use units	*	*	*	*	*
Garages—					
Class 1	50,000	25,000	25,000	25,000	O
Class 2	800	800	800	800	400
Theaters	U	U	O	O	O
Public assembly units	U	U	*	*	O
Churches	U	U	*	*	O
Schools	U	U	*	*	O

Maximum Allowable Floor Areas in Multi-Story Buildings Not Equipped with Automatic Sprinklers

Class of occupancy	Fire-proof const. Sq. ft.	Semi-fire-proof const. Sq. ft.	Heavy timber const. Sq. ft.	Ordinary const. Sq. ft.	Wood frame const. Sq. ft.
Single dwellings	U	U	U	U	*
Multiple dwellings	U	U	12,000	9,000	*
Institutional buildings	30,000	20,000	O	O	O
Office units	U	15,000	12,000	9,000	O
Sales units (2-story)	U	15,000	12,000	9,000	O
Sales unit more than 2-story	30,000	15,000	12,000	9,000	O
Financial units	U	15,000	12,000	9,000	O
Storage units	30,000	15,000	12,000	9,000	O
Manufacturing units	30,000	15,000	12,000	9,000	O
Hazardous use units	*	*	*	*	O
Garages—					
Class 1	30,000	18,000	9,000	9,000	O
Class 2	O	O	O	O	O
Theaters	U	*	O	O	O
Public assembly units	U	*	*	*	O
Churches	U	U	*	*	O
Schools	U	U	*	*	O

The symbols used in the above tables have the following meanings:

U	Fire area is unlimited.
*	Area limits are given in the chapter of requirements for this class of occupancy.
L	For buildings inside fire limits.
N	For buildings outside fire limits.
K	This area shall be allowed for the business of one person only. Where an area is used for the business of more than one person or for more than one business enterprise conducted by the same person, the area shall be subdivided as provided in the occupancy chapters in the building provisions of this code.
O	Buildings of this class of occupancy and type of construction are not permitted.

[Amend. Coun. J. 11-6-40, p. 3433.]

62-8. Except as otherwise provided, the maximum allowable fire area in any building, which is equipped with a standard system of automatic sprinklers, shall be twice the area permitted under section 62-7, or under the provisions of chapters in the building provisions of this code dealing with specific occupancies, for a like building not so equipped. Provided, however, that the maximum allowable fire area in any garage of semi-fireproof, heavy timber or ordinary construction which is equipped with a standard system of automatic sprinklers may be increased not to exceed fifty per cent of the area permitted under section 62-7 for a like garage not so equipped. [Amend. Coun. J. 11-6-40, p. 3434.]

62-9. In business units, any basement space located under a public sidewalk and entirely outside of the street line of the property shall be permitted in excess of the fire division areas allowed by this chapter.

Violation of Chapter Provisions

62-10. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 63

MULTIPLE USE BUILDINGS

63- 1. Application of occupancy chapters
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63- 3. Separations between occupancies
63- 4. Ground story communication
63- 5. Separate wiring system
63- 6. Assembly room separation
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63-1. For any building which is occupied or used for different purposes in different parts, the provisions of chapters in the building provisions of this code applying to a particular class of occupancy shall apply to such parts of the building coming within that class; and where such provisions are dissimilar, the requirements securing the greater fire-resistive construction, strength and safety, shall apply.

63-2. Certain classes of occupancy shall not be permitted within the same building or connected with other occupancies as follows:

Garage of class 1. A garage of class 1 shall not be permitted in any building used for a single dwelling, institutional building, church, school, or open air assembly unit except as otherwise provided in chapter 54 of this code, or public assembly unit of other than fireproof construction.

Hazardous use unit. A hazardous use unit shall not be permitted in any building or any other occupancy, except as otherwise provided in chapter 51 of this code, for the purposes auxiliary to the hazardous use; and except a room used for the storage or baling of waste paper, a standard drying room or a permissible standard fireproof vault, which may be located in a building of any occupancy.

Theater. A theater shall not be permitted in any building used for a hazardous use unit or a class 1 school.

63-3. The floors, walls, and other separations between parts of a building or adjacent buildings, used for different purposes, shall have a minimum fire-resistive construction value as required by this section; provided, however, that when the required type of construction requires walls and floors of a greater fire-resistive value, the higher required value shall govern.

(a) *Single dwellings.* Four hour fire-resistive separation from any theater, open air assembly unit, class 1 garage or school. One hour fire-resistive walls and ceiling separation from any class 2 garage. Two hour fire-resistive separation from any church, multiple dwelling, or public assembly unit, and in buildings more than two stories high, from any business unit. One hour fire-resistive separation from any business unit in buildings two stories or less in height.

(b) *Multiple dwelling.* Four hour fire-resistive separation from any class 1 garage, theater, open air assembly unit, or school. Two hour fire-resistive separation from any single dwelling, institutional building, business unit, church, or public assembly unit.

(c) *Institutional buildings.* Four hour fire-resistive separation from any business unit, open air assembly unit, or public assembly unit. Two hour fire-resistive separation from any single dwelling, multiple dwelling, or church.

(d) *Business units.* Four hour fire-resistive separation from any institutional building, class 1 garage, theater, or open air assembly unit. Two hour fire-resistive separation from any multiple dwelling, public assembly unit, church, or school, and in buildings more than two stories high, from any single dwelling. One hour fire-resistive separation from any single dwelling two stories or less in height.

(e) *Hazardous use units.* Separations between different hazardous use units shall be as provided in chapter 51 of this code. Three hour fire-resistive separation from any standard fireproof vault in any occupancy. Two hour fire-resistive separation from any room used for storage or baling of waste paper in any occupancy. One hour fire-resistive separation from any standard drying room in any occupancy.

(f) *Class 1 garage.* Four hour fire-resistive separation from any heating plant, multiple dwelling, business unit, theater where permitted by chapter 53 of this code, or public assembly unit. Two hour fire-resistive separation from any open air assembly unit.

(g) *Class 2 garage.* One hour fire-resistive separation from any single dwelling, business unit, open air assembly unit, or public assembly unit. Three hour fire-resistive separation from any multiple dwelling and from any basement or heating plant. Four hour fire-resistive separation from any theater.

(h) *Theater.* Four hour fire-resistive separation from any single dwelling, multiple dwelling, business unit, garage passage where permitted by chapter 53 of this code, open air assembly unit, public assembly unit, church or class 2 school.

(i) *Open air assembly unit.* Four hour fire-resistive separation from any single dwelling, multiple dwelling, institutional building, business unit, theater, or school. Two hour fire-resistive separation from any garage, public assembly unit, or church.

(j) *Public assembly unit.* Four hour fire-resistive separation from any institutional building, class 1 garage, theater, or school. Two hour fire-resistive separation from any single dwelling, multiple dwelling, business unit, open air assembly unit, or church.

(k) *Church.* Four hour fire-resistive separation from any theater. Two hour fire-resistive separation from any single dwelling, multiple dwelling, institutional building, business unit, open air assembly unit, public assembly unit, or school.

(l) *School.* Four hour fire-resistive separation from any single dwelling, multiple dwelling, theater, open air assembly unit, or public assembly unit. Two hour fire-resistive separation from any church, or business unit and between class 1 and class 2 schools.

(m) *Other buildings and structures.* Four hour fire-resistive separation between any building or structure included in chapter 58 of this code and any institutional building, class 1 garage, theater, open air assembly unit, public assembly unit, church, or school.

63-4. Wherever under the building provisions of this code, communication is permitted between different occupancies on the main exit level of any multiple use building, such communication shall be permitted at one or both street levels of any such building which is located on ground adjoining an existing, proposed, or authorized two level street; provided, however, that any such story shall have not less than two outside exit doorways.

63-5. In any multiple use building, any part of the building which is used for an institutional building, theater, public assembly unit, church, or school, shall have for each such occupancy an electric wiring system independent of the lighting system for any part of the building used for other occupancy; provided, however, that current for the entire building may be taken through a common service connection, when the main service and each such independent service are equipped with automatic circuit breakers, or other automatic switching devices.

63-6. Every assembly room in a building of multiple occupancy shall be separated from every other assembly room and other occupancy by not less than two hour fire-resistive construction.

63-7. All doorways or openings in fire-resistive walls between separate occupancies as required by this chapter shall have fire-resistive doors as provided for such walls in chapter 69 of this code.

63-8. A standard fire alarm system, arranged and installed in accordance with the provisions of chapter 90 of this code, shall be required in every multiple dwelling more than three stories high of other than fireproof or semi-fireproof construction and in every multiple dwelling, three stories high of other than fireproof or semi-fireproof construction in which more than two separate dwellings are located in the same fire division area on the third floor thereof.

63-9. Standard fire extinguishers, as described in chapter 90 of this code, shall be installed in every multiple dwelling as follows:

One standard fire extinguisher in each basement and each hallway of each floor which has an area greater than four thousand square feet and not more than ten thousand square feet; two standard fire extinguishers where the area of any such floor exceeds ten thousand square feet; one standard fire extinguisher in each basement and in each hallway of each floor above the third floor where the area of any such floor is four thousand square feet or less.

63-10. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 64

MEANS OF EXIT

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General Requirements

64-1. A means of exit shall be defined as any means providing a route of travel used by the occupants of a building for ingress thereto or egress therefrom, and may be a horizontal exit connection, a vertical means of exit, an outside exit doorway, an exit court, a normal exit, or an emergency exit.

64-2. A horizontal exit connection shall include any aisle, doorway, passageway, corridor, foyer, lobby, vestibule, balcony, or space other than a vertical means of exit, which leads to an exit from the building.

64-3. A vertical means of exit shall include any means of exit leading from one level to a higher or lower level, and toward the main exit level of a building, and may include a stairway, ramp, fire escape, escalator, or ladder as hereinafter provided.

64-4. Outside exit doorways shall lead directly or by way of fireproof horizontal exit connections to an open space at grade not less than ten feet wide which leads to a public alley not less than ten feet wide or to a street.

64-5. Exit courts shall lead to an open space at grade directly or by means of a fireproof passage having a width not less than the required width of the exit court, or to a public alley not less than ten feet wide or to a street.

64-6. A normal exit shall include only such means of exit which are also used as means of ingress by the occupants of a building; and an emergency exit shall include additional means of exit.

64-7. *General.* Every floor or occupied space more than one foot above or below grade shall have vertical means of exit as hereinafter provided.

Multiple occupancy. Every required vertical means of exit in a building of multiple occupancy shall afford no communication except upon the main exit level, with any part of the building used for other occupancies, in the following classes of occupancy:

Hospitals.
Hazardous use units.
Garages.
Theaters.
Churches, except to a fireproof lobby in a business unit of fireproof construction.

Schools, except to a fireproof lobby or corridor in a business unit of fireproof construction.

64-8. In every building each fire area shall be considered a separate and distinct building and, except as otherwise provided under the building provisions of this code, shall have means of exit as required under this chapter which will be separate and distinct from those of any other fire area, except as follows:

One stairway may be used in common for two areas of the same occupancy in the same building or as provided by section 64-7 for multiple occupancy, when such areas are separated by a required fire division wall; provided, however, that such stairway shall be not less than five feet six inches wide. Such a stairway shall be considered equivalent to one required stairway from each of said areas; provided, however, that the inclosing walls shall be of the same construction as required for fire division walls, and shall have one door at each opening which shall be not less fire-resistive than a standard fire door.

64-9. Any vomitory used as a means of exit or in lieu of a required stairway or ramp shall meet the requirements of the preceding sections of this chapter for required stairways and ramps with respect to number, width, location, enclosure, and construction, except as otherwise provided by occupancy chapters in the building provisions of this code.

64-10. Every non-habitable penthouse or other enclosed structure on a roof of any building shall have exit by one stairway not less than two feet wide, and if on a flat roof shall have at least one doorway to such roof.

64-11. Every building more than three stories high and having a flat roof shall be provided with one means of access to such roof for each twenty thousand square feet or fraction thereof of such roof area. Such access shall be either by a stairway from grade or from the main exit level of the building directly to said roof, or by a stairway from grade or from the main exit level of the building to a lower roof leading to a stairway to the higher roof. Any of said stairways may be located either inside or outside the building. Every such stairway shall be accessible from a public way, or from an open space directly connected with a public way; and if located inside the building shall have the rise of its lowest step not more than fifty feet by the most direct route of travel from an outside doorway on such public way, or open space. Every building three stories or less in height and having a flat roof, shall be provided with like access to such roof, except that a metal ladder may be used in lieu of the stairway from the topmost floor to the roof except in schools. Every penthouse with a flat roof shall be provided with either a stairway twenty-four inches wide or a ladder fourteen inches wide to such roof located either inside or outside the penthouse.

64-12. Every court in any building shall have an exit at the bottom which shall meet the requirements for exits from flat roofs; provided, however, that if a fire escape or stairway terminates at the bottom of an inner court or a closed lot line court, such exit shall meet the requirements for stairway exits. The floor of every court or open space upon which any exit doorways open shall be paved and shall be generally level or if ramped shall have a slope not greater than one rise in six horizontal, and shall meet the adjoining public way, or other open space without a step or curb or other obstruction. Every pipe, manhole, door, or other object located in the floor or walls of an exit court shall be flush with the floor or walls to prevent obstructions.

64-13. Every areaway serving as a required means of exit from any basement shall have a clear width not less than that of any stairway, ramp, or other vertical means of exit, or any corridor, passage, doorway, or other horizontal exit connection with which it is connected; provided, however, that such an areaway shall not in any case have a clear width of less than four feet.

64-14. In any building of fireproof or semi-fireproof construction a fire escape stairway may be located in an inner court having a horizontal dimension of not less than fifty feet, but such means of exit shall be connected at the bottom of the court with a stairway descending to an exit connection on the main exit floor, or to an outside exit doorway at ground level. Such a stairway shall be at least as wide as the fire escape served by it, but not less than three feet wide if provided solely for the purpose of serving such a fire escape, and if otherwise required by the building provisions of this code shall be increased in width by the width of the fire escape served. In a building of fireproof construction such junction may be at any level, but in a building of semi-fireproof construction such junction shall be no higher than thirty-five feet above grade.

Horizontal Exit Connections

64-15. One or more horizontal exit connections between adjoining or adjacent building units may be used in lieu of one of every two required stairways. Every such horizontal exit shall be so arranged that there will be continuously available paths of travel leading from each side of the exit to stairways or other means of exit which lead to outside the connected buildings. Such horizontal exit connections shall be by means of:

(a) *Doorways.* A doorway on each floor, except the main exit floor, through the dividing walls of adjoining units may be employed for such purpose. Such a doorway in any department store shall be not less than five feet in width, and not less than ninety per cent of the width of the main aisle required by section 50-30 of this code.

(b) *Bridges.* A bridge or passageway across an alley or other open space and connecting each habitable floor above the main exit level of one such area with the corresponding floor of the other area may be employed for such purposes, if of non-combustible construction with every window therein a type A window and with each end closed by walls having self-closing doors therein; provided, however, that such a bridge or passageway shall not be counted as a required stairway in a department store, unless the bridge or passageway be no longer than forty feet measured between building lines and equipped with a standard system of automatic sprinklers. At the end or ends of every such bridge or passageway, connected with a building of fireproof or semi-fireproof construction, the end wall shall be of two hour fire-resistive construction with forty-five minute fire-resistive doors; and at the end or ends of every such bridge or passageway connected with a building of other than fireproof or semi-fireproof construction, the end wall shall be of four hour fire-resistive construction, with sixty minute fire-resistive doors.

(c) *Tunnels.* A tunnel or passageway underground may be employed for such purpose, if made to comply with the applicable provisions of section 63-3 of this code.

(d) *Ramped floors.* The floor of any such bridge or tunnel may be ramped to meet differences in floor level between connected buildings or areas, subject to the provisions of this chapter dealing with design of stairways.

(e) *Location of exits.* Any such horizontal exit shall count as a required exit only when so located that no point on any floor shall be more distant therefrom than the permitted distance from a stairway.

The provisions for horizontal exit connections between buildings of different occupancies shall not apply to hazardous use units, garages, theaters, or schools.

64-16. Every inside and outside exit doorway shall be so arranged as to be readily visible and no obstruction interfering with access or visibility shall be permitted. No drapery shall be permitted to conceal or obstruct the required width of any exit doorway. No mirror shall be placed in the door nor shall any mirror be so arranged as to be mistaken for a means of exit.

64-17. Every swinging door at any doorway in an inclosure for a vertical means of exit shall be arranged to open only in the direction of the way out of the building. At every doorway which connects any habitable space with a corridor, lobby or other horizontal exit connection, it shall be permissible to arrange any swinging door to open into the habitable space, except in theaters, open air assembly units, public assembly units, churches, and schools where such doors shall open in the direction of egress.

64-18. No door or other closure for any outside doorway shall, when opened, project over a public way, or other public space, except as otherwise provided in this code. No door or other closure for any outside exit doorway, when opened, shall in any manner obstruct egress through any other outside exit doorway and, where necessary to avoid such obstruction, such a door or closure shall be recessed; provided, however, that such recess or vestibule shall not encroach upon any required public space. Every swinging door which opens into an outside passage leading to a public way, or other public space, shall be arranged to swing only in such manner that, if it should be ajar when the occupants are passing through such passage on their way out of the building, it shall automatically be closed by the movement of the crowd, or else shall swing through an arc of at least one hundred eighty degrees against the wall of the passage. Every outside exit door shall swing outward, except in single dwellings, multiple dwellings, business units not more than one story high with a floor area of five thousand square feet or less and garages of class 2, unless otherwise provided in the special occupancy chapters in the building provisions of this code.

64-19. Except in theaters and places of public assembly, a revolving door, meeting the requirements in the building provisions of this code, may be used as a means of exit. The revolving wings of such revolving doors shall be so arranged that, by the application of a force slightly more than is necessary to revolve said doors and which one person of ordinary strength is capable of exerting, all the wings of said door shall fold flat on each other in an outward direction, or unless the revolving wings of said revolving doors are so arranged that they may be readily collapsed or removed by pressure or simple mechanical means and leave sufficient opening for two or more persons to pass through with a minimum width of not less than one foot eight inches on each side of said collapsed doors. Glass panels of revolving doors shall be of laminated shatter-proof glass or wired glass. Where revolving doors are used as exits they shall be so credited only to the extent of the clear space remaining when the doors are collapsed.

64-20. The requirements of this chapter for doors opening outward shall not be construed to prohibit double swing doors which swing both inward and outward, except to vertical means of exit; nor shall such requirements be construed to prohibit the use of sliding fire doors in openings not counted as exits.

64-21. The clear width required for any exit doorway shall be the net unobstructed width of passageway through the opening, measured across the doorway when the door is fully opened. No part of any door, hardware, or other object shall be permitted to encroach upon the required clear width of any exit doorway; provided, however, that four inches of the projection of any panic hardware or push bar may be disregarded in determining or measuring the required width of any such doorway.

64-22. Any lock, latch, or other fastening device, used on any door, grille, gate, sash, or other closure for a doorway, gateway, or window, through which it is necessary to pass in order to reach a required exit or exit connection, in any building, except a single dwelling, correctional and penal institution, shall be arranged so that it may be easily opened by any person on the way out without a key or other detached opening device. Standard panic-proof hardware or devices shall be provided where required by the occupancy chapters in the building provisions of this code.

64-23. There shall be no radiators, doors, or other obstructions to exit travel in any horizontal exit connection which is seven feet or less in width, in any hospital, theater, open air assembly unit, public assembly unit, church, or school, other than handrails having a projection of four inches or less from any wall.

Stairways

64-24. A stairway is hereby defined as a system of three or more steps and rises between two or more different levels of any building either within or without its enclosing walls, inclined at an angle of forty-five degrees or less from the horizontal and serving as a means of ingress or egress of the occupants of such building.

64-25. The different parts of a stairway are defined as follows:

Cut. The horizontal distance between the faces of successive rises of a flight of steps.

Flight. A series of steps between successive landings or between successive landings and platforms.

Landing. The floor space adjoining the top or bottom of a flight, for a length equal to the width of stairs, or within the enclosure of an inclosed stairway.

Newel. An upright post at the end of a stair railing.

Nosing. A part of a tread projecting beyond the rise, but not a part of the required width of a cut.

Open stairs. An interior stairway without a complete inclosure.

Platform. Any landing between flights other than at a floor level.

Rise. The vertical distance between two successive treads or between a tread and a landing.

Soffit. The underside of a stairway.

Step. A tread and the rise beneath.

Stringer. A support for treads and rises, approximately at right angles thereto.

Tread. The horizontal surfaces of a step, including nosing.

Width of stairs. The least clear unobstructed length of tread; provided, however, that no handrail projects more than four inches into such stairway.

64-26. The required type, number and width of stairways shall be as provided by the occupancy chapters in the building provisions of this code. Except as otherwise permitted for certain utility stairs for the use of employes only, the minimum width of required stairways shall be three feet; and where handrails are provided on both sides of a stairway, the minimum width shall be three feet and four inches.

64-27. Except as hereinafter provided for fire-shield stairways, the materials used in the construction of stairways shall be those permitted under chapter 67 of this code for the type of building in which they occur.

64-28. The enclosure of fire-shield stairways shall be as required under this chapter for fire-shield stairways. Other interior stairways, above the first story, and all basement stairways shall be enclosed as follows:

(a) In buildings of fireproof or semi-fireproof construction, inclosing walls and ceilings shall be of non-combustible materials of at least one hour fire-resistive value.

(b) In buildings of other types of construction, enclosing walls and ceilings shall be of at least two-hour fire-resistive value. Such enclosing walls shall be of burned clay or Portland cement concrete units, four inches or more in thickness.

Doors in stair enclosures, other than in buildings used for dwelling purposes, schools, and churches and not more than three stories and basement in height, shall be at least forty-five minute fire-resistive doors. [Amend. Coun. J. 5-2-40, p. 2416; 11-6-40, p. 3434.]

64-29. Except as otherwise required or permitted under occupancy chapters in the building provisions of this code, stairways shall be so located that no part of any habitable floor shall be more than one hundred feet distant from a stairway, measured upon the route of travel thereto.

64-30. Non-required stairways shall be subject to the same requirements, except as to location, as required stairways.

64-31. No step in a required interior stairway shall have a rise of more than eight inches and no step in a non-required stairway shall have a rise of more than eight and one-half inches. The cut of any stair shall be not less than nine inches. The cut and rise of every stair shall be such that the product of the cut multiplied by the rise shall be not less than seventy and not more than seventy-five. Rises and treads shall be of uniform dimensions throughout any flight. Any vertical steps not conforming to this section shall be as required for ladders. In a hospital, theater, public assembly unit, church, or school, the rise shall be not more than seven and one-half inches and the cut not less than ten inches in any required stairway.

64-32. Every floor landing and every intermediate platform shall be level and shall be at least as wide as the stairway; except that in a straight run of stairs, an intermediate platform shall be at least four feet long. Every platform intermediate between flights where there is a change of direction of sixty degrees or less shall be at least four feet long for its entire width and for a change of direction of more than sixty degrees, such length shall be at least equal to the width. Every stairway shall have a level landing not less than four feet long intervening between such stairway and any ramp or sloping floor.

64-33. No flight in any stairway shall have a total vertical rise of more than thirteen feet six inches without an intermediate level platform and no flight in any interior stairway shall contain less than three rises. To overcome any lesser differences in level, an incline with a slope as required for ramps shall be used.

64-34. Each side of a stairway, except stairways in aisles between fixed seats, or between fixed seats and a wall, shall be protected with a railing. There shall be a handrail on at least one side of every stairway, and on each side of every stairway which is more than three feet six inches in width. Every interior stairway which is more than seven feet in width shall have double intermediate handrails to divide the stairway into clear widths of seven feet or less. The height of a required handrail shall be not less than two feet six inches, nor more than three feet, measured vertically from the front edge of any tread to the top of the handrail. Every required handrail and railing shall extend from the top of the stair to the front edge of the third tread from the bottom or to a lower point. Where a flight of stairs meets an intermediate platform, the ends of the side handrail or handrails shall be turned and joined to the wall, or else shall extend completely across or around said intermediate platform. Handrails may be of any material which is equal or superior in strength to wood. In a theater, public assembly unit, church, or school, there shall be a newel post at the upper and lower ends of every intermediate handrail, which shall have a height not less than five feet above the landing, platform, or tread. In a hospital, theater, public assembly unit, church, or school, every handrail mounted on a wall shall have its ends returned and joined to the wall.

64-35. Space under the bottom flight of any stair in any building of wood frame, unprotected metal, non-combustible frame, ordinary, or heavy timber construction shall be either entirely open or completely inclosed without any opening thereto.

64-36. There shall be no winders in any required or non-required stairway, except as hereinafter provided. Any tread in any winder shall be not less than nine inches wide at a distance of one foot from the center of the newel post or from the wall or railing on the narrow side of the tread and the widths of successive treads at such distance shall not vary from one another by more than one inch.

64-37. Stairways in the main exit story may be combined into a single open flight; provided, however, that the width of such single flight shall be not less than one hundred and twenty per cent of the sum of the required width of all flights combined; and provided further, that the number of flights so combined shall not exceed fifty per cent of the total number of required stairways.

64-38. Two flights of a required stairway may be separated by a distance not exceeding fifty feet measured on the most direct route of travel from the center of the bottom riser of one flight to the center of the top riser of the other flight, and such route of travel shall be inclosed in the same manner as required for the stairway; provided, however, that fire-shield stairways may be separated any required distance. Any required stairway which is inclosed in the first story shall extend to the main exit floor of the building and shall be so arranged that it will be impossible to pass from any such stairway to a basement stairway without going outside the stairway inclosure. In any building abutting a two level street, either street level may be used to determine the main exit level.

64-39. Where there is any change in the direction of a public stairway in a theater, open air assembly unit, public assembly unit, church, or school, the inclosing wall on the outer side of the turn shall be curved to a radius of not less than two feet; or if such wall be not curved, it shall have no angle of less than one hundred thirty-five degrees, measured between the interior faces of the walls and shall be without any straight run less than one foot eight inches horizontally.

Fire-shield Stairway

64-40. A fire-shield stairway is an interior stairway, constructed of non-combustible materials, in accordance with all of the following sections of this chapter dealing therewith, equipped with a vestibule or balcony vented to the outer air directly or by means of an interior smoke shaft, and with self-closing doors of at least a forty-five minute fire-resistive value, at each entrance thereto.

64-41. Every stair landing or platform in a fire-shield stairway shall be of fireproof construction and every other part shall be non-combustible except for handrails.

64-42. Every fire-shield stairway providing exit from any story shall extend from such story to the main exit floor of the building, either directly or as hereinafter provided.

64-43. Every fire-shield stairway shall be not less than three feet eight inches wide at any point.

64-44. Every fire-shield stairway shall be enclosed with solid walls of brick masonry built in accordance with the requirements of chapter 73 of this code, not less than eight inches thick, or of reinforced concrete built in accordance with the requirements of chapter 74 of this code, not less than six inches thick. Every enclosing wall shall extend from the bottom of the stairway to the roof or a fireproof floor above the stairway; and in a building of other than fireproof or semi-fireproof construction, such walls shall extend at least three feet above such roof. The thickness of such walls shall be maintained at all points, without any cut or chase to afford a bearing for any structural member or for any recesses. Any combustible structural member bearing in any way on such a wall, and any anchor of such a structural member, shall be of a self-releasing type. The floor beneath and the floor or roof above every fire-shield stairway and any soffit in an offset connection permitted by this section shall be of fireproof construction not less than six inches thick. There shall be no openings for doors, windows, recesses, or cabinets, or other openings in the enclosure other than the required exit doorways.

64-45. The entrance from each floor of the building to the fire-shield stairway shall be through a vestibule or balcony, not less than the required width of stairs in least dimension. The enclosing walls, roof, and floor of any such vestibule or balcony shall conform to the requirements of section 64-44 for the enclosure of stairs, except that an outside wall shall conform to the requirements of chapter 73 of this code for masonry enclosing walls. There shall be no combustible material in any such vestibule or balcony. One side of every vestibule or balcony required by this section shall face a public way, or an open court or space leading directly to a public way, or an interior smoke shaft conforming to the requirements of this section, or a fire-resistive tunnel leading directly to a public way. The open side of every such entrance vestibule or balcony shall be closed for its full width up to a level four feet above the floor by a solid wall. Extending from the top of such wall to the ceiling there shall be a space with a width not less than eighty per cent of the width of the vestibule or balcony, or in any case not less than three feet six inches wide; which space shall be closed with a fire-shield as hereinafter provided, except that any such opening on a street or public space, not less than forty feet wide, may be left open. Every balcony of a fire-shield stairway shall be constructed within the lot lines, and shall not encroach upon or overhang a public way or other public space.

64-46. Every fire-shield required or permitted by this chapter shall be set in a solid frame of steel or iron, or in a hollow sheet steel or iron frame filled with concrete, with a horizontal cross member midway between the top and bottom of said frame, which frame and cross member shall have a strength as required by chapter 70 of this code. Such frame shall be set with its inside surface flush with the inside face of the wall below the opening. Every fire-shield shall consist of two or more metal sashes with wired glass, meeting the requirements of chapter 65 of this code for a type A window. The upper half of every fire-shield sash shall be arranged to open automatically in case of fire to the full limit, and shall be held securely in such open position and shall close easily and quickly when desired. Every mechanism or device for the accomplishment of these purposes shall be positive in action, non-rusting and located inside the building and shall be as approved by the commissioner of buildings. Every sash shall be provided with a bar or lever for manual operation to release and open the sash; and shall have a sign placed near bar or lever which shall read, "IN CASE OF FIRE, PUSH." Such mechanism for the opening of sash may be actuated by springs, electricity, or other means which will set the mechanism in operation as a result of a difference in the rate of temperature rise, or other devices adjusted to operate when the suroundīng air reaches a temperature of one hundred ten degrees Fahrenheit. One such temperature operated device shall be mounted in the ceiling outside every entrance vestibule or balcony of the fire-shield stairway at a distance of not more than five feet from the entrance doorways, and the operation of any one of these devices shall cause all the upper sashes of the fire-shield in such story to open immediately. Sashes may be closed manually. Where the sash would otherwise exceed five feet in width, intermediate piers or mullions of the same construction as required for fireproof construction shall be installed.

64-47. In any fire-shield stairway there shall be no step between the floor of a vestibule or balcony and the floor landing of the fire-shield stair, nor between either of such floors and the adjoining floor of the building. Any difference in level between any such floors shall be overcome by a ramp with a slope not exceeding one in twelve. Any exit landing shall be not less than the required width of the stairway.

64-48. Every interior smoke shaft used for an entrance, vestibule, or balcony of a fire-shield stairway, shall be at least five feet wide at every point and shall be open and unobstructed over an area of not less than fifty square feet from its bottom to the sky; provided, however, that such shaft may be covered with a roof if the walls are open on all sides beneath such roof with a total open area of not less than one hundred square feet, either with or without fixed louvers. The bottom of such smoke shaft shall be not more than twelve inches above the floor level of the lowest required vestibule or balcony. Any such smoke shaft in a building of semi-fireproof or fireproof construction may be offset at any point; provided, however, that such lateral connection shall be not less in area than the required area of the shaft, and the soffit of said lateral connection shall be inclined at an angle of not less than forty-five degrees to the horizontal. There shall be no other openings into any smoke shaft except as required by this chapter for fire-shield stairways.

64-49. Every fire-shield stairway shall terminate at the main exit level of the building and shall provide an exit to a public way, or to an open space leading to a public way, either directly from the stairway without passing through any vestibule or by way of a tunnel of fireproof construction. The outside exit doorway from the fire-shield stairway shall have a clear width between jambs not less than the width of the stairway. Every exit doorway required by this section shall be equipped with a forty-five minute fire-resistive door which shall open outward only. Every such door shall be self-closing, equipped with panic hardware.

64-50. In every building occupied, or arranged, designed or intended for more than one tenant, every entrance required by the provisions of this chapter on fire-shield stairways shall be from a corridor, lobby, or other space accessible to all occupants of the building and to the public. In every story occupied by only one tenant, all or any of the entrances required by this section, may be directly from rentable area or other space, without passage through any corridor, lobby, or other public space. Every doorway from the building into an entrance vestibule or balcony of a fire-shield stairway, and every doorway from such a vestibule or balcony into the stairway proper, shall have a clear width between jambs not less than ninety per cent of the width of the stair, and shall be equipped with a forty-five minute fire-resistive door.

64-51. Two fire-shield stairways not less than four feet wide shall be considered equal to three required interior stairways; provided, however, that one fire-shield stairway not less than four feet wide shall be considered equal to two required stairways in any building of fireproof or semi-fireproof construction except multiple dwellings, hazardous use units, garages, and theaters. Any building of fireproof or semi-fireproof construction except hospitals, garages, theaters, public assembly units, churches, schools, and multiple dwellings, in which the net area of the habitable part of any floor does not exceed three thousand square feet, is required to have only one stairway, if such stairway is a fire-shield stairway not less than four feet wide. In every other building, in which a fire-shield stairway is used, there shall be not less than two stairways. One inch of width of a fire-shield stairway shall be considered equivalent to one and one-half inches of width of any other type of enclosed stairway, in determining the aggregate width of stairways required for any such building. A fire-shield stairway, serving an area of not more than three thousand square feet may also be used in combination with two interior stairways, when connected in the story served by it with both of the other two stairways by means of a fireproof passage, which is no less in any horizontal dimension than is required for an entrance vestibule of such a stairway; and on either side of such junction, such passage shall be at least seventy-five per cent of the required width of the fire-shield stairway, but in any case not less than three feet six inches wide at any point. Where a fire-shield stairway is used in lieu of interior stairways, the distance from such stairway doorway to the end of a corridor shall be not more than one hundred feet in any business unit on any floor other than at the main exit level.

Ramps in Lieu of Stairways

64-52. Ramps may be used in lieu of stairways when constructed in accordance with the provisions of this chapter.

64-53. The number, width, location, and enclosure of ramps, used in lieu of stairways, shall be as required for the stairways displaced by such ramps; provided, however, that ramps forming a required means of exit from a building shall be enclosed as to prevent the accumulation or formulation of snow or ice thereon.

64-54. Ramps shall be subject to all of the applicable provisions for the construction of stairways.

64-55. Any ramp used in lieu of stairways shall have a slope not greater than one unit rise in eight units horizontal. Any ramp used as a horizontal exit connection shall have a slope not greater than one unit rise in six horizontal, except as otherwise provided by the occupancy chapters in the building provisions of this code.

64-56. Every ramp having a slope greater than one rise in twelve horizontal shall have a non-slip surface.

64-57. Where a ramp has a slope greater than one rise in twelve horizontal, handrails shall be required at both sides, but no intermediate handrails will be required.

Escalators in Lieu of Stairways

64-58. An escalator moving in the direction toward the main exit level and meeting the requirements of chapter 79 of this code may be used in lieu of an equal width of required stairway, and may be substituted for one out of four required stairways. Such escalators shall be inclosed as required for the stairways displaced thereby. An escalator serving a basement or sub-basement area shall be at least one hundred feet distant from any escalator serving floors above the main exit level.

Exterior Fire-escape Stairways

64-59. Every exterior non-combustible stairway and every exterior fire-escape stairway shall be constructed in accordance with the provisions of the following sections of this chapter dealing with exterior fire-escape stairways.

64-60. Exterior fire-escape stairways shall not be placed on buildings hereafter erected or converted for department store use. Such exterior fire-escape stairways may be used on buildings classified as "Business Units" below a level of two hundred sixty-four feet above grade, and on other buildings where permitted by occupancy chapters in the building provisions of this code.

64-61. One or more exterior fire-escape stairways, meeting the requirements of this chapter dealing therewith, may be used in lieu of a required interior stairway, as provided in the special requirements for exits in buildings of each occupancy group. Except for buildings designed, intended or used as department stores, one or more exterior fire-escape stairways may be used in lieu of one out of each three required interior stairways for any building six stories or less in height; provided, however, that the total width of any such fire-escape stairway shall be not less than the required width of stairway which is displaced; and provided further, that a fire-escape stairway shall not be used in lieu of a fire-shield stairway or in lieu of any portion of the required width of a fire-shield stairway. A fire-escape stairway shall be not less than two feet and not more than four feet wide unless an intermediate handrail is provided.

64-62. Every fire-escape stairway shall be located outside the building on a wall facing a public way, or on a wall of a private alley, court or other open space not less than ten feet wide and having an unobstructed exit to a public way at grade. A tunnel of two hour fire-resistive construction shall be considered an unobstructed exit from an inner court or a closed lot line court if it is of the required exit width, and is not less than seven feet high throughout its length and is without any door, gate or other means of closure. No part of any such stairway shall project beyond a street line, except as otherwise provided for theaters, and except as hereinafter provided for existing buildings, but may project wholly or in part into a public alley. A fire-escape stairway, placed on an exterior wall adjoining a fire-division wall, shall be considered as a fire-escape stairway for each building area which it adjoins. In such cases there shall be at least one door or window from each building area leading to the stairway platform.

Fire escape stairways may be projected over a public way only upon an existing building, provided that: (a) the character of its occupancy, its class or dwelling arrangement, has not been changed since July 6, 1938; and (b) there is no unoccupied or vacant space on the lot over which such stairway can be built in accordance with the provisions of this code; and (c) if such stairway, when erected, will make the building conform with the exit requirements of this code. [Amend. Coun. J. 2-26-41, p. 4337.]

64-63. Wherever access is required from the interior of a building to a fire-escape stairway, such access shall be through a doorway or casement window not less than two feet in clear width nor less than six feet six inches in clear height. The sill of any such doorway or window shall be not more than two feet above the floor unless a stairway is provided leading to it. Such a stairway shall be at least as wide as the doorway or window. Any such required door or window shall be arranged to open from the inside without the use of a key. Successive flights of a fire-escape stairway may be located at a distance from one another and connected by a runway located outside the building and constructed as required by this section for a fire-escape runway.

64-64. Any balcony, landing, platform, or runway forming a part of a fire-escape stairway shall have a width or length not less than the required width of the stairway. No such balcony, landing, or platform shall be less than three feet long. No door, window, or shutter shall open in such a manner as to reduce any required dimension of a balcony, landing, platform, or runway, or obstruct the clear passage thereon, whether such clear passage is in excess of the required dimension or not. The frame of every balcony, landing, platform, or runway shall be made of steel or wrought iron angles not less than two inches by two inches by one-fourth inch in size, or of other structural shapes of equivalent strength. Such angles or other shapes shall be securely riveted together with cross bars every two feet. Such bars shall be punched one-half inch square close to the top of the bar on two inch centers and one-half inch square bars shall be forced through the same. The cross bars shall be securely riveted to the angle iron frame. The cross bars for a balcony two feet four inches wide or less shall be two inches by three-eighths inch. Balcony frames more than two feet four inches wide shall be made of not less than two by three-eighths inch iron, and shall be made to conform with the increased dimensions of iron in cross bars. For a balcony three feet or more in width, balcony frames shall be two and one-half inches by three-eighths inch. All balconies over this width shall have a two inch T beam through the center of the balcony for the bars to rest upon; provided, however, that such balconies and platforms of hospitals may have solid floors of non-combustible material. Such balconies shall have a substantial cast or wrought iron post every three feet, bolted to the balcony. Every balcony shall have not less than three guard rails which shall be of wrought iron or new iron pipe not less than three-fourths inch in diameter, not less than three feet high, and securely anchored to the wall of the building.

64-65. Rises and treads shall be uniform throughout any flight. The height of rises shall not exceed eight inches and the treads shall be not less than ten inches wide for any required stairway, and any tread may overhang the tread beneath not more than one inch. The width of the stairway shall be at least two feet except as otherwise provided in the building provisions of this code.

64-66. Where the anchors and braces by which a fire-escape stairway is attached to or supported on a building, are of non-corroding metal, such members shall not be required to be larger than necessary to carry the computed stresses.

Where such members are of metal, subject to rust or corrosion, they shall be one inch square for a stairway, balcony, landing, platform, or runway four feet two inches or less in width; one and one-fourth inches square for a stairway, balcony, landing, platform, or runway more than four feet two inches and not more than six feet in width; and one and one-half inches square for a stairway, balcony, landing, platform, or runway more than six feet in width. Every such anchor shall be securely fastened to the building by being passed through a masonry wall not less than twelve inches thick and fastened on the inside thereof; or by being inserted in masonry or reinforced concrete construction to a depth of not less than fourteen inches at an angle of thirty-five degrees with the horizontal and set with Portland cement mortar; or by being fastened to a channel set in a masonry or reinforced concrete wall, which channel shall be not less then four inches wide and five feet long; or by being attached to a reinforced concrete wall or structural member, when such wall or structural member and the attachment of the anchor thereto are designed in accordance with the structural provisions of this code pertaining to buildings; or by being bolted or riveted to the structural metal frame of the building. All anchors shall be turned up at least eight inches at their outer ends to provide for their attachment to posts. Braces shall be attached to the building either by being inserted in masonry or reinforced concrete to a depth of six inches or more, and set with Portland cement mortar, or by bolting and riveting to the structural steel frame of the building. Single braces shall have a spread equal to the width of the platform. Braces for any platform more than five feet wide shall be double, one brace extending to the outside of the platform and one to its center. Where an anchor or brace passes into or through any masonry or reinforced concrete construction, the portion of such anchor or brace immediately outside such masonry or reinforced concrete shall be bent downward, either vertically or at an incline, to a point at least two inches lower than the bottom of the opening into the masonry or reinforced concrete.

64-67. Stringers shall be made of two steel or wrought iron bars, three inches by five-sixteenths inch about one inch apart, or four and one-half inches by three-eighths inch flat iron, or of steel or wrought iron channels, angles, or I-beams. Where over twelve feet in length they shall have anchor and brace in the center. The tread shall be made of one-half inch square steel or wrought iron bars, set corner upwards not to exceed one and five-eighths inches apart on centers, riveted to ends to two by seven-sixteenths inch flat iron or steel. Treads shall be supported by a truss made of steel or bar iron two inches by three-eighths inch in thickness welded to bars of treads in center supported by not less than two seven-sixteenths inch rods bolted at each end of treads. All stairs shall have three-bar railings made of one inch bar iron for top rail, and three-fourths inch bar iron for lower rails and when such stairs are more than three inches from the wall or pass any opening of the building, or are more than three feet in width, there shall be one or more handrails on the wall side of such stairs. The top rail shall be not less than three feet six inches high measured vertically from the nosing of the stair treads. The required railings shall be supported on posts made of one and one-half inch channels or angles or larger sections. Such posts shall be attached by bolts or rivets or by welding to the turned up ends of the braces of the fire-escape.

64-68. A counterbalanced stair, meeting the requirements of the sections of this chapter dealing with exterior fire-escape stairways, where such requirements are not in conflict with other requirements in the building provisions of this code, may be used for the bottom flight of any stairway fire-escape. The vertical height from top landing to bottom landing of such a counterbalanced section shall not exceed fourteen feet. The stringer carrying the counterweight may be built of steel or wrought iron channels, angles or I-beams, or any combination thereof, not less than eight inches deep and three-eighths inch thick; and shall be so designed that the maximum fiber stress over the support shall not exceed eight thousand pounds per square inch. The moment of inertia about the vertical axis parallel to the web of the stringer shall be not less than thirty-three per cent of the moment of inertia about the horizontal axis perpendicular to the web passing through the center, such moment of inertia being obtained by riveting an angle or angles to the channel or I-beam stringer. The same section of stringer shall be continued for an equal distance on either side of the support and the reinforcement shall be extended as close to the counterweight as practicable. The truss rod from the counterweight to the opposite end of the stringer shall be used either as an independent brace or in connection with the railing to prevent any sag of the stringer. It shall be at least three-fourths inch in diameter, with connections sufficient to develop the strength of the rod, but in figuring stresses, the stringer must be assumed to carry the total dead and live load as required by the building provisions of this code. The connection between the stringer and supporting rod must be designed to stiffen the stringer against horizontal or twisting motion by means of a steel casting or forging riveted to the stringer both through the web and the flange.

64-69. There shall be a vertical clearance of not less than fourteen feet underneath any fire-escape, or any part thereof, which overhangs an alley or other public space, or an easement which is used as a public thoroughfare. This requirement shall apply to both fixed and counterbalanced section.

64-70. Wherever a stairway, balcony, landing, platform, or runway of a fire-escape stairway passes a window or doorway or is located ten feet or less from a window or doorway, such window or door shall be of wired glass and shall have metal frames and sash; and wherever such a stairway passes above a window, doorway, or other opening not fitted with wired glass and metal frame, such stairway shall be protected on the underside by sheet metal of not less than one hundred twenty-five thousandths inch thickness above such openings and for a distance of three feet on each side thereof.

Chute Fire-escapes

64-71. An enclosed chute, either straight or spiral, may be used in lieu of one stairway out of three required stairways from any story in any building four stories or less in height, except hospitals, theaters, public assembly units, or churches; provided, however, that such chute fire-escape shall be credited as a substitute for not more than the minimum width of a required stairway. An enclosed straight slide chute may be used in hospitals three stories or less in height. An enclosed spiral chute within the building may be used in lieu of one stairway out of three required stairways within a building of any height, except in hospitals, sales units, theaters, public assembly units, or churches; provided, however, that in hazardous use units such spiral chute may be either within or without the building, and may be used in lieu of one out of two required stairways in hazardous use units when all such remaining stairways are enclosed. No open chute shall be used as a means of exit.

64-72. An enclosed chute may be located either inside or outside a building. Every enclosed chute shall provide an exit to a public way or to an open space leading to a public way, either directly from the bottom of the chute, or by a route of travel measuring not more than twenty-five feet from the point of discharge of the chute to an outside exit doorway of the building, or by way of a tunnel of two hour fire-resistive construction not less than four feet wide.

64-73. The side, the enclosure, all supporting members, and all parts of auxiliary features of an enclosed chute shall be of non-combustible material. Sheet metal shall be no thinner than No. 16 U. S. standard gauge or .0625 inch for the slide or enclosure, except the enclosure of a straight slide which shall be no thinner than No. 20 U. S. standard gauge. All sheet iron or steel in a slide and its enclosure located outside a building shall be galvanized. All sheet metal in the slide, whether inside or outside the building, shall be galvanized and unpainted, and shall be maintained bright and free from rust. The slide and any other part of the chute with which a user may come in contact shall be free of cracks, crevasses, or any projection or roughness which may produce injury. The construction shall be without any projection which will afford a handhold whereby a user might stop his descent. The pitch and the design of the slide shall be such that a person using it will be discharged without injury. The height of the bottom of the discharge opening shall be not less than one foot four inches nor more than two feet above the ground or the floor in front of it. Stresses in any part of a chute shall conform to the stresses required by chapters 70 to 77 of this code. No galvanized metal shall be welded. An enclosed straight chute shall consist of a tube having an inside diameter not less than thirty-six inches, with a flare to an inside height not less than forty-two inches measured at the exit end, except that a straight chute for a school for children, or children's home may have an inside diameter of not less than two feet six inches. A straight tube shall be inclined at an angle not steeper than thirty degrees to the horizontal for any building except a hospital and at an angle of forty degrees to the horizontal for a hospital. Supports for the tube shall be spaced not more than twelve feet apart on centers. The lower end of the tube shall be horizontal for a length of three feet for any building except a hospital and for a length of six feet for any hospital. Such horizontal section shall be connected to the main inclined section by an elbow to provide easy transition. A horizontal metal bar of three-fourths inch diameter shall be located near the top of the entrance for users to grasp with hands when entering chute. An enclosed spiral chute shall consist of a spiral slide within a tubular shell of not less than five feet inside diameter. The pitch or rate of vertical descent of the slide shall be not more than seven feet nor less than five feet in one full turn of three hundred sixty degrees. In a metal shell, the upper three stories shall be not lighter than No. 16 U. S. standard gauge, and the next two stories not lighter than No. 14 U. S. standard gauge and so increased two gauge numbers for each additional two stories or part thereof, unless the chute is supported at successive floors; but the base section shall be in any case not lighter than No. 12 U. S. standard gauge; and the base section of any chute more than fifty feet in height shall be not lighter than three-sixteenths inch thick steel plate. Every exterior chute shall be anchored to the building, and shall be reinforced and braced to resist wind pressure as required by the building provisions of this code. Every chute shall have angle rings at joints and every chute more than fifty feet high shall have vertical angles not less than three in number.

64-74. Every chute and passage thereto located within a building shall be enclosed with fire-resistive construction of the value required for the stairway which it displaces. There shall be no opening into such enclosure except for entrance to, and exit from the chute. Access to an exterior spiral chute at any point shall be through a fully enclosed passage between the entrance doorway and the tubular shell. Such enclosure shall be of non-combustible material and if of metal, it shall be not less than No. 16 U. S. standard gauge.

64-75. Every part of fire-escape chutes shall be designed to support a live load of not less than one hundred pounds per square foot of slide surfaces projected horizontally.

64-76. Every entrance doorway to a chute, either straight or spiral, shall have a clear width of at least thirty inches and a clear height of at least six feet six inches, when such chute is entered by means of a platform between the entrance door and chute. When the sliding surface of the chute is extended to the threshold of the entrance door, the doorway shall have a clear width of not less than two feet six inches and a height of not less than three feet six inches for any building except a hospital and shall have a clear width of not less than three feet four inches for a hospital. Every such doorway shall be provided with a self-closing door or doors arranged to open inward toward the chute on simple pressure from the building side, and having a fire-resistance not less than a forty-five minute fire-resistive door. Such door or doors may be locked so as to prevent entry from the chute to the building; provided, however, that such lock cannot in any way interfere with entrance into the chute as required in this section. Such a door, when opened, shall not project into the tubular shell of the spiral chute. Every exit doorway from a chute shall have a clear width of not less than the inside diameter of the chute, and a clear height of at least three feet six inches. Every exit door within the building shall be self-closing and arranged to open outward only, and shall not project over a sidewalk or other public space. Every such door shall open on a simple pressure from the inside, and shall not have any lock which can in any way interfere with an exit from the chute.

Ladder Fire-escapes

64-77. Any stairway or vertical means of exit by steps inclined at an angle of more than forty-five degrees from the horizontal shall be defined as a ladder.

64-78. The clear width shall be not less than seventeen inches. Side guards shall consist of flat steel or wrought iron not less than two inches by three-eighths inch in cross section. Rungs shall be spaced uniformly and not more than fourteen inches on centers. Rungs shall be of square steel or wrought iron bars, of not less than one-half inch size, set with corners upward and riveted to the side guards. The ladder shall be anchored to the wall of the building as required for stairway fire-escape, except that anchors may be inserted in masonry or reinforced concrete to a depth of eight inches. The brace for the anchors shall have a spread of at least twenty inches, and shall extend into the wall not less than four inches. No pipe or other hollow section shall be used in the construction of a ladder fire-escape.

64-79. The lowest portion of a ladder fire-escape extending to street level or ground level shall consist of a counterbalanced stair. Such a counterbalanced stair shall conform to the requirements for a counterbalanced stair of a stairway fire-escape, except that the width need not be greater than is required for the ladder fire-escape.

Violation of Chapter Provisions

64-80. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 65

WINDOWS, SKYLIGHTS, AND VENTILATION

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General Requirements

65-1. Every habitable room in any building hereafter designed, erected, or converted, shall have at least one window, or door or transom, opening directly upon a public way, yard, court, or other open space, or skylight opening through the ceiling and roof immediately above such a room. Except as otherwise required by the occupancy chapters in the building provisions of this code, for buildings of special occupancy, such openings shall have a combined glass area of not less than ten per cent of the floor area of any habitable room, and in any case not less than ten square feet; and shall have ventilating openings of not less than four per cent of the floor area, unless otherwise provided in chapter 81 of this code. If any habitable room is deficient in the requirements either as to glass or ventilating openings, a mechanical ventilating system shall be installed for the excess floor area, as provided by chapter 81 of this code. Every room, other than a habitable room, which contains any water closet, urinal fixture, and every kitchen, shall have windows or skylights for natural ventilation, or a mechanical ventilating system as provided by this section; provided, however, that any window or skylight so required shall have a glass area of not less than six square feet and a glass width of not less than one foot.

65-2. Any windows or skylights required by the building provisions of this code for light and ventilation shall not be reduced in number or area because of any mechanical ventilating system in the habitable rooms of any single dwelling or multiple dwelling or any hospital sleeping room, or any school class room or any bakery required by other provisions of this code to have such windows or skylights.

65-3. Windows and skylights shall not be required to be other than wood frames with ordinary glass in any building of wood frame construction, or in any other buildings, except as otherwise provided in the following sections.

65-4. Type A windows, built as provided in this chapter, shall be required for openings in all buildings more than one story in height, excepting single dwellings of any height, multiple dwellings three stories or less in height, and churches having double-glazed openings when located as follows:

(a) *Alleys, easements or railroad right-of-way.* Any window located less than twenty-four feet from the opposite side of an alley, easement or railroad right-of-way; provided, however, that such windows facing on an alley, easement or railroad right-of-way in the first or second story, if located not more than sixteen feet from the street line, may be of any construction, except as otherwise provided for hazardous use units in chapter 51 of this code and for garages in chapter 52 of this code.

(b) *Lot lines.* Any window located less than twelve feet from a dividing lot line.

(c) *Courts.* Any window facing other openings in the opposite wall of a court less than twenty-four feet in width.

(d) *Fire Areas.* Any windows in two or more fire areas in walls forming an angle of less than one hundred fifty degrees on the outside faces thereof, which are also separated from each other by a distance of less than nine feet measured along the faces of walls; or in such walls forming an angle of from one hundred fifty to one hundred eighty degrees which are also separated from each other by a distance of less than four feet, six inches.

(e) *Roofs.* Any windows located less than forty feet above a roof on the same premises having combustible sheathing.

(f) *Stairs.* Any window in a stairway, except where a fire-shield is required and any window in a required stairway enclosure in a school or public assembly unit.

(g) *Fire escapes.* Any window within ten feet of a fire escape or exterior stairway. [Amend. Coun. J. 5-2-40, p. 2414.]

65-5. Type A skylights, built as provided in this chapter, shall be required for any skylight in buildings more than one story in height, or for any greenhouse or skylight more than thirty feet above grade, or for any skylight twelve feet or less from any dividing lot line, except as otherwise provided for hazardous use units in chapter 51 of this code and for garages in chapter 52 of this code.

65-6. In any building required to have exterior walls of non-combustible materials, any door or window mullion or transom bar over eight inches wide shall be covered on the exterior side with non-combustible materials equivalent to two hour fire-resistive covering as provided in chapter 68 of this code.

Windows

65-7. Any required window for a habitable room shall have a glass area measured between rebates of not less than ten square feet, and for rooms other than habitable rooms, not less than six square feet, unless such window is in excess of the area required by the building provisions of this code for such room. The head of any required window shall be not less than six feet, six inches from the floor to the top of operating sash in any single or multiple dwelling, and not less than seven feet in any other building, except as otherwise required by the occupancy chapters in the building provisions of this code; provided, however, that any casement sash having a transom bar with glass above to the height of six feet, six inches, may be not less than six feet from the floor to the top of the operating sash in any single or multiple dwelling. The width of glass in any required operating sash shall be not less than one foot.

65-8. Every window in a non-combustible wall shall have a non-combustible sill and spandrel wall equivalent in fire-resistive value to two hour fire-resistive construction for a vertical distance not less than three feet between such opening and any opening in the story next below such opening.

65-9. Every window above the first story of any building, which is not made reversible in construction, so that it may be cleaned on both sides, either from the inside or from an outside floor, roof or balcony, shall be equipped with devices for window washers' safety harness attachment. Such devices shall be of twin-head forged non-rusting metal secured by not less than two bolts of three-eighths inch diameter of the same metal through the wall or window frame at each side of the window. Any single dwelling and multiple dwelling three stories or less in height, shall be exempt from the provisions of this section.

Type A Windows

65-10. Wherever in the building provisions of this code a type A window is required, such window shall be constructed of non-combustible materials and glazed with wired glass as required by the following sections of this chapter dealing therewith.

65-11. Any window opening in a masonry wall, which is more than eighty-four square feet in superficial area, shall be divided by one or more beams into spaces which are not more than eighty-four square feet in area. Every beam required for this purpose shall have a moment of inertia of not less than twelve about an axis parallel to the plane of the wall and shall have a two hour fire-resistive covering as provided in chapter 68 of this code. Such a beam shall extend from the sill to the head of the frame if serving as a mullion and from jamb to jamb if serving as a transom bar, and shall be securely fastened at each end.

65-12. Every frame shall be retained in the wall opening by a continuous flange or offsets at both jambs which shall have a bearing against the masonry of not less than seven-eighths inch. Every movable sash shall be so constructed that it will engage properly with the frame at all points of contact and will maintain adequate protection from the weather. It shall not warp or bulge excessively under heat or rapid cooling.

65-13. Hollow sheet metal frames and sashes shall be made of galvanized iron or non-rusting steel, not less than one-fortieth inch thick and of a quality soft enough to permit of necessary bending without breaking, or shall be made of copper not less than one thirty-seventh inch thick or of other non-ferrous metal of equal thickness, of not less resistance to corrosion and fusibility. All joints shall be made with interlocking seams securely riveted together and in no case shall solder be used for other than weather-proofing purposes. The head of the frame shall be closed at the top and the piece forming this closure shall be securely fastened to each side at all points. Sills formed of sheet metal, having a thickness of less than seventy-five thousandths of an inch shall be filled solidly with non-combustible material. Every sliding or other movable sash shall have stiles, rails, and muntins, if any, measuring not less than one and three-fourths inches in either width or thickness. Every such sash shall be securely fastened at all corners and shall be so constructed that it will correspond with the frame at every place of contact. No single sash other than a casement sash shall be larger than five feet by six feet, and no single casement sash shall be larger than three and one-half feet by ten feet.

65-14. Solid rolled steel frames and sashes shall be made of solid sections not less than seven sixty-fourths inch thick securely riveted, locked, or welded together at all corners and junctions so as to have sufficient strength and rigidity to withstand handling and installation without distortion and also to withstand operation and wind pressure. Weathering strips and removable members for retaining the glass shall be not less than one-sixteenth inch thick.

65-15. Heavy gauge steel frames and sashes shall be made of steel not less than one-sixteenth inch thick. Such frames and sashes shall conform in all other respects to the provisions for solid rolled steel frames and sashes, but shall not be used for any type A window opening exceeding thirty square feet in area, nor for any single pane of glass exceeding five hundred sixty square inches.

65-16. Lifting or sliding sashes shall be counterweighed so as to balance, and if double hung the sash weights shall be separated by parting strips in the weight boxes and the weights shall be accessible through the boxes. Such sashes shall be provided with metallic sash chain, cord, or tape, and smooth running sash pulleys securely riveted or bolted into place. The sash chain, cord, or tape shall be of sufficient strength to withstand severe heat without parting and shall be thoroughly protected against moisture or corrosion. Every sash shall be fitted into its frame with stops and parting beads of metal or their equivalent and shall be removable. Meeting rails of sashes shall be so constructed as to prevent the passage of heat and flame and shall be equipped with one or more substantial sash locks securely riveted or bolted in place.

65-17. Pivoted sashes shall be provided with metal pivots at least three-eighths inch in diameter, securely attached. Pivots shall work in substantial metal eye plates bushed with non-ferrous metal and securely attached in place. Sheet metal frames shall be reinforced where the pivots enter by riveting on one-eighth inch metal strips so drilled as to receive the pivots. Every such sash shall be provided with suitable stops and an effective attachment for holding it open or closed, and with a substantial gravity lock or ledge that will be positive in action and hold the sash tightly closed when exposed to heat. Where either sash is stationary or where two pivoted sashes are used, the transom bar dividing such sashes shall be so constructed that it will not warp or bulge excessively under heat or rapid cooling. Rails or transom bars, where used, shall be made with washers and drips to shed water properly and to afford ample weatherproof qualities.

65-18. Hinged sashes shall be hinged with substantial metal hinges securely bolted or riveted in place, and provided with metal latches or locks securely fasened in place. Every such sash shall be constructed so as to fit the frame closely and shall be provided with stops and fastenings that will prevent excessive warping or bulging under heat or rapid cooling.

65-19. Frames and sashes, except non-ferrous metals, shall have all their parts protected by a covering of enamel or mineral paint.

65-20. All glazing shall be with wired glass not less than one-fourth inch thick, with three-fourths inch or smaller mesh. No single pane shall have an exposed area of more than seven hundred twenty square inches measured on the inner face of the window, nor a length or width of more than fifty-four inches, except as otherwise provided in section 65-13. Glass shall be held in position by cleats or other structural pieces or parts of the frame or sash, without dependence on any material used for waterproofing, extending completely around each pane on both faces. On the inner face of the glass, the width of such cleats or other structural pieces or parts shall be not less than three-fourths inch for a pane of seven hundred twenty square inches; and for a pane of lesser area, said required width shall be reduced one-sixteenth inch for each one hundred square inches by which the area of the pane is reduced below seven hundred twenty square inches; provided, however, that the width of such cleats or other pieces or part of the inner face of the glass shall be not less than one-half inch in any case. On the outer, or weather face of the glass, the width of such cleats or other structural pieces or parts shall be not less than one-half inch for a pane of three hundred fifty square inches or greater area; and for a pane of lesser area said width shall be not less than one-half the width of the cleat or other structural piece or part of the frame or sash on the inner face of the glass; provided, however, that the width of such cleats or other structural pieces or parts on the outer side of the glass shall be not less than one-fourth inch in any case. All glass shall be embedded in putty.

Skylights

65-21. There shall be no limitations of size or location of any type A skylight, built as provided by those sections of this chapter dealing therewith, or for any greenhouse thirty feet or less above grade, or for any skylight for a one story building when such skylight is located more than twelve feet from any dividing lot line.

65-22. The curb of any skylight shall be of the same construction as the roof on which it is located, but if of wood shall be metal-clad. The frame and the sash shall be of non-combustible material, if any point of the skylight is more than fifty feet above grade, and shall be of non-combustible material or of wood completely metal-clad if more than one story and fifty feet or less above grade; provided, however, that wood frames and sashes may be used in lieu of non-combustible material in any wood frame building or any other building where metal corroding fumes are present as an incident to the occupancy of the building. All structural parts of any skylight shall meet the provisions of the structural provisions of this code pertaining to buildings.

65-23. Every type A skylight shall be glazed with wired glass not less than one-fourth inch thick. Every other skylight required to have non-combustible or metal-clad frames and sash shall be glazed with wired glass not less than one-fourth inch thick; provided, however, that any part of a skylight more than thirty feet above grade shall be glazed with wired glass. Any sidewalk type or pavement type skylight may be glazed with prism glass lights sixteen square inches or less in area and not less than one-half inch thick, with individual lights separated by non-combustible structural members where the roof or floor adjoining is required to be of heavy timber construction or a superior type of construction.

65-24. Every skylight used in lieu of windows for ventilation shall be provided with a ventilating opening or openings having a combined area of not less than three per cent of the base area of the skylight. The area of such opening or openings shall be counted as a part of the area or ventilating openings required by chapter 81 of this code.

Type A Skylight

65-25. Whenever in this code a type A skylight is required, such skylight shall be constructed of non-combustible materials and glazed with wired glass as required by the following sections of this chapter dealing therewith.

65-26. Every type A skylight of sheet metal shall be constructed of galvanized iron or non-rusting metal not lighter than No. 24 U. S. standard gauge or of copper weighing not less than sixteen ounces per square foot.

65-27. Type A skylight members of solid rolled metal shall be not less than one-eighth inch thick.

65-28. Frames and sashes, except non-ferrous metals shall have all their parts protected by a covering of enamel or mineral paint.

65-29. All glazing shall be with wired glass not less than one-fourth inch thick with three-fourths inch or smaller mesh. No single pane shall have an exposed area of more than twelve hundred square inches nor a length of more than five feet. Glass shall be held in position by cleats or other structural pieces or parts of the frame as required by this chapter for type A windows.

Violation of Chapter Provisions

65-30. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 66

EXIT LIGHTING AND SIGNS

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Exit Illumination

66-1. Every means of exit in buildings hereafter designed, erected, or altered shall be provided with electric lighting consisting of normal, additional, or emergency illumination and signs, as provided by this chapter, except as otherwise required by the occupancy chapters in the building provisions of this code. Such means of exit in every existing building shall be provided with normal illumination, exit signs, and fire escape signs as required by this chapter within one year after July 13, 1938.

66-2. Except as otherwise provided by the occupancy chapters in the building provisions of this code, every means of exit shall have a system of electric lighting for normal illumination of an intensity not less than five-tenths foot candle at every point of the floor therein, except vertical means of exit which shall have an intensity of one foot candle in every part thereof. Every passenger elevator car floor and every doorway outside of a passenger elevator hatchway shall be illuminated as required for a vertical means of exit.

66-3. Additional illumination of an intensity equal to twenty per cent of that required by section 66-2 shall be provided in all means of exit which shall be supplied from the general lighting source, but controlled separately from the required lights and connected with such source ahead or outside of the main circuit breaker which controls the required general lighting circuits in the following buildings: institutional buildings, business units three stories or more in height, hazardous use units three stories or more in height, class 1 garages, theaters, public assembly units, and every assembly room having a capacity of more than eighteen hundred persons in churches and schools. Such system of additional illumination shall be controlled only from a point within the vestibule, lobby, or principal entrance hall of the building. [Amend. Coun. J. 5-2-40, p. 2415.]

66-4. In every building exit signs, directional signs, and fire escape signs, illuminated by electricity, shall be provided to mark all ways of egress as required by this chapter, except as otherwise provided for buildings by the occupancy chapters in the building provisions of this code.

Exit Signs

66-5. Standard exit signs shall be required to mark the doors leading to all vertical means of exit in multiple dwellings of the corridor type and over every exit doorway from a lobby, dining room, or assembly room having an area of more than five hundred square feet in any multiple dwelling; and over every exit doorway or connection in institutional buildings, office, financial, and sales units, two stories or more in height; storage and manufacturing units and hazardous use units, three stories or more in height; class 1 garages, theaters, open air assembly units having a capacity of more than eight hundred persons, public assembly units having a capacity of more than two hundred fifty persons, churches, and schools.

66-6. Every standard exit sign shall bear the word "EXIT" with letters not less than six inches high if the sign is illuminated externally, and not less than four and one-half inches high if illuminated internally. Six inch letters shall have the principal stroke three-fourths inch wide and four and one-half inch letters, one-half inch wide.

66-7. All externally illuminated signs shall have white letters on a red field, and internally illuminated signs shall have red letters of translucent material in an opaque field. The light for externally illuminated signs shall have a disc or lens of not less than twenty-five square inches surface of translucent material to show red on the side of approach.

66-8. Every exit sign shall be illuminated by electricity, with an intensity of illumination of not less than five foot candles on the surface of sign. Every such sign shall have lights supplied from circuits of the wiring system for additional illumination of exits where such illumination is required by section 66-3.

66-9. Such exit signs shall not be required where fire escape signs are required by this chapter.

Directional Signs

66-10. Standard directional signs shall be provided for such buildings as are required to have exit signs as provided in the following sections of this chapter dealing therewith.

66-11. Standard directional signs shall be located at every intersection or turning of any bridge, passageway, or tunnel serving as a horizontal exit, and for every horizontal exit connection on the main exit level at every change in direction and every intersection of such exit connection, and at every doorway on the main exit level from an enclosure for any vertical means of exit other than an enclosure having an outside exit doorway therefrom.

66-12. Standard directional signs shall be located at every yard, court, passage, or other exterior space leading from any public exit to a public space serving as a way of departure from a building, where there is any change in direction, intersection, or other irregularity of arrangement.

66-13. Every standard directional sign shall bear the words "TO EXIT" with a suitable arrow to point the way and such letters shall be as otherwise required by section 66-6 for exit signs.

66-14. The colors and illumination of all directional signs shall be as required by sections 66-7 and 66-8 for exit signs.

Fire Escape Signs

66-15. Standard fire escape signs shall be provided at every doorway or other opening leading to any fire escape, or to any exterior stairway and at every other doorway or passage leading to any such means of exit from any corridor, lobby, or passage on the same floor.

66-16. Every fire escape sign shall bear the words "FIRE ESCAPE" in letters as otherwise required by section 66-6 for exit signs.

66-17. The colors and illumination of all fire escape signs shall be as required by sections 66-7 and 66-8 for exit signs.

Floor Indicating Signs

66-18. In every building, required by this chapter, to have exit signs, there shall be a sign or number at every floor within any vertical means of exit to indicate the several respective floors; provided, however, that such a sign shall not be required at the main exit level when the vertical means of exit terminates at such level. Letters or figures shall be of the size required for standard exit signs, and of any legible contrasting colors on walls, glass, or other surface.

Violation of Chapter Provisions

66-19. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 67

CONSTRUCTION TYPE PROVISIONS

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67-1. All building construction shall be classified under the following five types:

(a) Fireproof construction.
(b) Semi-fireproof construction.
(c) Heavy timber construction.
(d) Ordinary construction.
(e) Wood frame construction.

The relative fire-resistive value of the types listed herein shall be deemed to decrease in the order given. Buildings and structures shall be classified as of the type of the least fire-resistive construction used therein.

67-2. Every building and structure shall conform to the provisions of this chapter for the type of construction required by the occupancy chapters in the building provisions of this code for the respective occupancy uses of such buildings and structures.

67-3. The term "fireproofing" wherever used in this code, where the term has reference to building or structures, shall be understood to refer to the fire-resistive materials, coverings, or values required by the building provisions of this code.

Fireproof Construction

67-4. Every building or structure and every part thereof, required to be of fireproof construction shall meet the requirements of this chapter dealing therewith.

67-5. Joists or studding of wood or other combustible material shall not be used in the construction of floors or partitions, except as door bucks, in buildings of fireproof construction.

67-6. The structural frame shall be of metal, reinforced concrete, masonry bearing walls or piers, or a combination of such materials. All metal members of the structural frame shall be protected by coverings of the fire-resistive values required by this chapter for fireproof construction and of materials and thickness required for such values by chapter 68 of this code. Except as hereinafter provided, all metal or reinforced concrete members of the structural frame shall be constructed with the following fire-resistance:

All columns, all members supporting walls, all members supporting more than one floor and all wind-bracing shall have four hour fire-resistance.

All members, other than columns and joists, supporting only one floor or roof shall have three hour fire-resistance.

67-7. The fire-resistive covering of certain members of the structural frame, may be omitted or reduced in value as follows:

Where lintel or spandrel beams are protected, as required by the second paragraph of section 67-6, the exterior wall facing of same, if not more than four and one-half inches thick, may be carried, for the height of the spandrel beam, on unprotected metal angles anchored to and supported by the protected member at not to exceed three foot intervals.

Loose lintels over exterior wall openings not exceeding three and one-half feet in clear width need not be fireproofed.

Certain members forming part of the floor construction may have fireproofing reduced as hereinafter provided.

Tie beams at floor levels between hatchways in elevator shafts, elevator sheave beams, and beams forming elevator cable slots need not be fireproofed.

67-8. The floor construction shall include structural slabs, arches, joists, and beams other than members of the structural frame named in section 67-6.

67-9. Every floor shall have structural metal or reinforced concrete framing members with reinforced concrete or masonry slabs or arches forming a floor construction having a fire-resistive value of three hours.

67-10. All structural metal shall be fireproofed with a covering of three hour fire-resistive value; except that concrete fireproofing on the topsides of such members need not exceed one and one-fourth inch in thickness. All reinforced concrete and masonry shall be constructed with a three hour fire-resistive value.

67-11. Sleepers of wood or not less fire-resistive material may be laid on the required slab or arch construction for the securing of a finish floor. Such sleepers shall not extend under any required partition wall or enclosure. The spaces between such sleepers shall be filled with a non-combustible material.

67-12. The roof construction shall include structural slabs, arches, joists, purlins, and beams other than members of the structural frame named in section 67-6 of this code.

67-13. Every roof shall have structural metal or reinforced concrete framing members, with metal plate roofs, reinforced concrete slabs or masonry arches, forming a roof construction having a fire-resistive value of three hours.

67-14. All structural members shall be fireproofed with a covering of three hour fire-resistive value.

67-15. Every exterior bearing and non-bearing wall, including exterior walls of courts, vent shafts, and light shafts, shall be constructed of masonry or reinforced concrete, as provided in the general provisions and the structural provisions of this code pertaining to buildings and shall have a fire-resistive value of not less than four hours.

67-16. Every exterior enclosing wall of a bay window, oriel, or other similar projection from the face of a main wall shall be constructed as required for the main wall construction.

67-17. Every cornice shall be of non-combustible material, including the backing, furring, and supports thereof.

67-18. The provisions of chapter 61 of this code shall govern the construction of partitions in fireproof buildings.

67-19. Wood grounds and wood furring, projecting not more than three inches from a non-combustible wall surface, shall be permitted for the attachment of finish wood trim and cabinet work permitted under section 67-20; provided, however, that all hollow spaces so formed shall be subdivided by fire-stops spaced not more than six feet apart in any direction. Such fire-stops shall be not less fire-resistive than one and five-eighths inch of solid wood. All other grounds and furring shall be non-combustible.

67-20. Wood or other not more combustible material may be used in buildings of fireproof construction, except as otherwise provided in the building provisions of this code, for the following purposes:

(a) Interior architectural trim.
(b) Floor surfaces and sleepers.
(c) Wood cabinet work for wall and ceiling paneling.
(d) Backing, frames, platforms, and aprons of exterior show windows at street level.
(e) Handrails.
(f) Doors, door frames, and bucks.
(g) Grounds, as permitted in section 67-19.

Semi-fireproof Construction

67-21. Every building or structure and every part thereof required to be of semi-fireproof construction, shall meet the requirements of this chapter dealing therewith.

67-22. Joists or studding of wood or other combustible material shall not be used in the construction of floors or partitions, except as door bucks, in buildings of semi-fireproof construction.

67-23. The structural frame shall be of metal, reinforced concrete, masonry bearing walls or piers, or a combination of such materials. All metal members of the structural frame shall be protected by coverings of the fire-resistive value required by this chapter for semi-fireproof construction and of materials and thickness required for such values by chapter 68 of this code. Except as hereinafter provided, all metal or reinforced members of the structural frame shall be constructed with the following fire-resistance:

All exterior columns shall have a four hour fire-resistive value. All interior columns, all members other than exterior columns, which support walls, all members supporting more than one floor, and all wind-bracing, shall have three hour fire-resistance.

All members, other than columns and joists, supporting only one floor or roof shall have two hour fire-resistance.

67-24. The fire-resistive covering of certain members of the structural frame may be omitted or reduced in value as follows:

Where lintel or spandrel beams are protected, as required by the second paragraph of section 67-23, the exterior wall facing of same, if not more than four and one-half inches thick, may be carried, for the height of the spandrel beam, on unprotected metal anchored to and supported by the protected member at not to exceed three foot intervals.

Loose lintels over exterior wall openings not exceeding three and one-half feet in clear width need not be fireproofed.

Certain members forming part of the floor construction may have fireproofing reduced as hereinafter provided.

Tie beams at floor levels between hatchways in elevator shafts, elevator sheave beams, and beams forming elevator cable slots need not be fireproofed.

67-25. The floor construction shall include structural slabs, arches, joists, and beams other than members of the structural frame named in section 67-23.

67-26. Every floor shall have structural metal or reinforced concrete framing members or trussed steel joists, with reinforced concrete or masonry slabs or arches, or metal plate floors, meeting the requirements of the structural provisions of this code pertaining to buildings and forming a floor construction having a fire-resistive value of one hour. All metal or reinforced concrete members shall be constructed with the fire-resistive values prescribed in section 67-27.

67-27. All structural metal and trussed steel joists shall be fireproofed with a covering of one hour fire-resistive value or by a ceiling of metal lath and plaster attached to or suspended below such members and shall be fire-stopped at points of support. Any side of a structural member not enclosed by the space between such fire-resistive floor and ceiling shall be protected with a covering of one hour fire-resistive value.

67-28. Sleepers of wood or not less fire-resistive material may be laid on top of the required slab or arch construction for the securing of a finish floor. Such sleepers shall not extend under any required partition wall or enclosure. The spaces between such sleepers shall be filled with a non-combustible material.

67-29. The roof construction shall include structural slabs, arches, joists, purlins, and beams other than members of the structural frame named in section 67-23.

67-30.—Every roof shall have metal or reinforced concrete framing members or trussed steel joists, rafters, or purlins, with reinforced concrete slabs or masonry arches, metal plate decks, meeting the requirements of the structural provisions of this code pertaining to buildings and forming a roof construction having a fire-resistive value of one hour.

67-31. All structural members shall be fireproofed with a covering of one hour fire-resistive value in one of the two following ways:

(a) By a complete covering of one hour fire-resistive value.

(b) By a ceiling of one hour fire-resistive value attached to or suspended below the bottom of such members. Any side of a structural member, not enclosed by the space between such ceiling and the roof construction shall be protected by a covering of one hour fire-resistive value.

67-32. Every exterior bearing and non-bearing wall, including exterior walls of courts, vent shafts, and light shafts, shall be constructed of masonry or reinforced concrete as provided in the general provisions and the structural provisions of this code pertaining to buildings and shall have a fire-resistive value of not less than four hours.

67-33. Every exterior enclosing wall of a bay window, oriel, or other similar projection from the face of a main wall shall be constructed as required for the main wall construction.

67-34. Every cornice shall be of non-combustible material, including the backing, furring, and supports thereof.

67-35. The provisions of chapter 61 of this code govern the construction of partitions in semi-fireproof buildings.

67-36. Wood grounds and wood furring, projecting not more than three inches from a non-combustible wall surface, shall be permitted for the attachment of finish wood trim and cabinet work permitted under section 67-37; provided, however, that all hollow spaces so formed shall be subdivided by fire-stops spaced not more than six feet apart in any direction. Such fire-stops shall be not less fire-resistive than one and five-eighths inch of solid wood. Other grounds and furring shall be non-combustible.

67-37. Wood or other not more combustible material may be used in buildings of semi-fireproof construction, except as otherwise provided in the building provisions of this code, for the following purposes:

(a) Interior architectural trim.
(b) Floor surfaces and sleepers.
(c) Wood cabinet work for wall and ceiling paneling.
(d) Backing, frames, platforms, and aprons of exterior show windows at street level.
(e) Handrails.
(f) Doors, door frames, and bucks.
(g) Grounds as permitted in section 67-36.

Heavy Timber Construction

67-38. Every building or structure and every part thereof required to be of heavy timber construction shall meet the requirements of this chapter dealing therewith.

67-39. All exterior walls shall be constructed of either a structural frame of metal or reinforced concrete with inclosing walls of masonry, or of masonry bearing walls or piers, or a combination of such construction. Other structural members shall be of metal, reinforced concrete, masonry, timber, or a combination of such materials. Except as otherwise provided in section 67-40, all structural members shall be constructed with the following fire-resistive values:

(a) Exterior columns shall have four hour fire-resistance.

(b) Members, other than exterior columns supporting walls, shall have three hour fire-resistance.

(c) Interior columns, beams, girders, and truss members, other than timber, shall have two hour fire-resistance.

(d) Timber columns shall have minimum actual dimension of nine and one-half inches.

(e) Timber beams, girders, and truss members supporting any load other than a roof shall have minimum actual dimensions of five and one-half inches with minimum actual area of cross-section of fifty-two square inches.

(f) Timber beams, girders, and truss members supporting only a roof shall have minimum actual dimension of three and five-eighths inches.

67-40. Except as otherwise provided in the building provisions of this code, fireproofing shall not be required for the following members:

(a) Beams, girders, and trusses supporting a roof only, where the clear height above the floor is twenty feet or more.

(b) Loose lintels which support not more than one story.

(c) Metal connections, fastenings, and accessories for timber members such as bases, caps, stirrups, bolsters, tie rods, anchors, and boxes.

67-41. In heavy timber construction, all members of the floor construction, except the flooring, are included in and shall be governed by the provisions for the structural frame. The floors shall be of wood not less than three and one-half inches in actual thickness, with the component pieces fastened together by spikes, tongues and grooves, splines or otherwise in a manner which will cause them to act in unison. Such floors may be of two layers; provided, however, that the lower layer shall be not less than two and five-eighths inches thick. If a ceiling is installed, it shall be placed directly against the floor above without an intervening air space of more than one-half inch.

67-42. In heavy timber construction, all members of the roof construction, except the sheathing, are included in and shall be governed by the provisions for the structural frame. Every roof shall be sheathed with wood not less than two and five-eighths inches thick in one layer; provided, however, that in buildings equipped throughout with a standard system of automatic sprinklers, the roof sheathing may be not less than one and five-eighths inch in actual thickness.

67-43. Every exterior bearing and non-bearing wall, including exterior walls of courts, vent shafts, and light shafts shall be constructed of masonry or reinforced concrete as provided in the general provisions and the structural provisions of this code pertaining to buildings and shall have a fire-resistive value of not less than four hours.

67.44. Every exterior enclosing wall of a bay window, oriel, or other similar projection from the face of a main wall shall be constructed as required for the main wall construction.

67-45. Every cornice shall be of non-combustible material, including the backing, furring, and supports thereof.

67-46. The provisions of chapter 61 of this code shall govern the construction of partitions in buildings of heavy timber construction.

67-47. Grounds and furring in buildings of heavy timber construction shall be as required in buildings of fireproof construction.

67-48. Wood or other not more combustible material may be used in buildings of heavy timber construction, except as otherwise provided in the building provisions of this code, for the following purposes:

(a) Interior architectural trim.
(b) Flooring and roof sheathing.
(c) Wood cabinet work for wall and ceiling paneling.
(d) Backing, frames, platforms, and aprons of exterior show windows at street level.
(e) Handrails.
(f) Doors and frames, except as otherwise required. No combustible sleepers, combustible lath, nor combustible interior construction, forming hollow spaces, shall be used.

Ordinary Construction

67-49. Every building or structure and every part thereof required to be of ordinary construction, shall meet the requirements of this chapter dealing therewith.

67-50. The structural members shall be of metal, reinforced concrete, masonry, wood, or a combination of such materials.

67-51. The floor and roof construction shall include joists, flooring, and sheathing. All floor and roof construction shall be of wood or other more fire-resistive material. Trussed steel joists, meeting the requirements of the building provisions of this code, may be used in buildings of ordinary construction. Except as provided in chapter 47 of this code, no floor nor roof shall be supported on a wood stud partition.

67-52. The basement ceilings of buildings of ordinary construction more than two stories in height shall be protected by metal lath and plaster; provided, however, that this requirement shall not apply where the first floor construction is of at least one hour fire-resistive value.

67-53. Ceilings in the portions of buildings of wood joisted ordinary construction used only for dwelling purposes and except as provided in section 67-52 preceding, shall be lathed with wood or metal lath, or in lieu thereof a gypsum, compressed fiber or similar plaster base not less than three-eighths inch in thickness may be used, and to whichever plaster base is used shall be applied a coat or coats of lime, gypsum or cement plaster not less than one-half inch in thickness measured from the face of the lath or plaster base—five-eighths inch in the case of metal lath; or in lieu of said plaster base and plaster other material of equal total thickness and having a fire resistance value of not less than one-half hour rating and a sanitation value equivalent to that afforded by a seamless unbroken continuous plaster surface and that has been tested, approved and accepted according to the requirements of sections 41-1 to 41-6 of this code may be used.

67-54. Every exterior bearing and non-bearing wall, including exterior walls of courts, vent shafts, and light shafts, shall be constructed of masonry or reinforced concrete, as provided in the general provisions and the structural provisions of this code pertaining to buildings, and shall have a fire-resistive value of not less than three hours.

67-55. Every exterior enclosing wall of a bay window, oriel, or other similar projection from the face of a main wall shall be constructed as required for the main wall construction.

67-56. Every cornice projecting over a street or alley lot line, shall be of non-combustible material, including the backing, furring, and supports thereof.

67-57. The provisions of chapter 61 of this code, shall govern the construction of partitions in buildings of ordinary construction.

Wood Frame Construction

67-58. Every building, or part thereof, designated as of wood frame construction shall meet the requirements of this chapter dealing therewith.

67-59. No building, structure, shed, or enclosure of wood frame construction shall be erected inside the fire limits, or provisional fire limits, except as permitted for a specified use under the occupancy chapters in the building provisions of this code.

67-60. The area, height, use, and other limits for buildings, structures, sheds, or enclosures of wood frame construction, outside of the fire limits or provisional fire limits shall be as given in the occupancy chapters in the building provisions of this code.

67-61. Exterior walls and roofs shall be framed with wood framing members. Exterior walls shall be surfaced with materials not less fire-resistive than wood. Roofs shall be sheathed with wood and shall be covered with a fire-retarding material. The outside of exterior wall framing shall be sheathed with wood. Sheathing of any material shall be covered with weather resisting surface material. Where exterior stucco finish is used, sheathing shall be covered with waterproof paper and the lath or other stucco base shall be furred out from the surface of such covering.

67-62. The provisions of chapter 61 of this code shall govern partitions in wood frame construction.

67-63. Finish floors may be of wood or not less fire-resistive material. Structural floor joists, supported on wood construction, shall be of wood.

67-64. Any veneer of masonry over wood frame construction shall be not less than three and three-fourth inches thick. Such veneers shall be supported on a foundation of masonry or reinforced concrete and shall be secured to the frame by not less than two anchors per square foot of wall area. Each anchor shall have a cross-sectional area of not less than two-tenths of one inch and shall be secured to a stud. Masonry veneers shall be not more than two stories or more than thirty feet in height at any point measured from the top of their supporting foundations.

67-65. All space between studs shall be fire-stopped top and bottom in each story. All spaces between joists and rafters shall be fire-stopped at the supports. Fire-stops shall consist of wood not less than one and five-eighths inch in thickness or of not less fire-resistive material.

67-66. Ceilings in the portions of buildings of wood frame construction used for dwelling purposes shall be lathed with wood or metal lath, or in lieu thereof a gypsum, compressed fiber or similar plaster base not less than three-eighths inch in thickness may be used, and to whichever is used shall be applied a coat or coats of lime, gypsum or cement plaster not less than one-half inch in thickness measured from the face of the lath or plaster base—five-eighths inch in the case of metal lath; or in lieu of said plaster base and plaster other material of equal total thickness and having a fire resistance value of not less than one-half hour rating and a sanitation value equivalent to that afforded by a seamless unbroken continuous plaster surface and that has been tested, approved and accepted according to the requirements of Article 302 of this ordinance, may be used.

Violation of Chapter Provisions

67-67. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 68

FIRE-RESISTIVE STANDARDS

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68-1. Materials and methods of construction conforming to the provisions of this chapter shall be used in all buildings and structures for which fire-resistive materials are required and fire-resistive classifications are established by this code.

68-2. Building materials and methods of construction shall be classified for fire-protective and fire-resistive purposes, decreasing in relative fire-resistive value in the following order:

Four hour fire-resistive construction.
Three hour fire-resistive construction.
Two hour fire-resistive construction.
One hour fire-resistive construction.

Fire-resistive Materials

68-3. The materials which, for the purposes of this code, shall be defined as fire-resistive, shall include materials which conform to the requirements set forth in the following sections of this chapter dealing therewith.

68-4. Brick shall be at least equal to the requirements of one of the following standard specifications of the American Society for Testing Materials: Specifications for Building Brick made from Clay or Shale (Serial Designation C62-30); Specifications for Concrete Building Brick (Serial Designation C55-34); or Specifications for Sand-Lime Building Brick (Serial Designation C73-30).

68-5. Burned clay or shale tile shall be at least equal to the requirements of one of the following standard specifications of the American Society for Testing Materials: Specifications for Structural Clay Load-Bearing Wall Tile (Serial Designation C34-36); Specifications for Structural Clay Non-Load Bearing Tile

(Serial Designation C56-36); or Specifications for Structural Clay Floor Tile (Serial Designation C57-36).

68-6. Terra cotta units shall be at least equal to the requirements of section 73-10.

68-7. Hollow concrete units shall be equal at least to the requirements of one of the following specifications of the American Society for Testing Materials: Specifications and Tests for Load-Bearing Concrete Masonry Units (Serial Designation C90-36); or Specifications and Methods of Test for Concrete Units for Non-Load-Bearing Masonry (Serial Designation C129-37T). Solid concrete units shall conform to the requirements of chapter 73 dealing therewith.

68-8. Portland cement concrete for fire-resistive purposes shall conform to the provisions of chapter 74 of this code, except that burned clay or shale, blast furnace slag, or other non-combustible material, approved by the commissioner of buildings may be used as an aggregate. Concrete for such purposes shall contain not more than seven volumes of aggregate, fine and coarse measured separately, to each volume of Portland cement.

68-9. Metal lath of either wire mesh or expanded metal, to be used as a fire-resistive plaster base, shall weigh not less than two and five-tenths pounds per square yard when used on vertical surfaces and not less than three pounds per square yard when used on horizontal or sloping surfaces. Metal lath shall not be considered as a fire-resistive material except when used as a plaster base in the same plane and integral with the plaster.

68-10. Wherever plaster is required or permitted as a fire-resistive material in this chapter, it shall consist of not less than two coats having a total thickness of not less than one-half inch applied directly to concrete or masonry and three-fourths inch applied to metal lath, measured from the face of the lath.

68-11. Cast-in-place gypsum shall contain not more than five per cent of wood chips, excelsior or fiber, measured in a dry condition as a percentage by weight of the dry mix.

68-12. Gypsum tile or block shall conform to Standard Specifications of the American Society for Testing Materials (Serial Designation C52-33), except that it shall contain not more than five per cent of wood chips, excelsior or fiber, measured in a dry condition as a percentage by weight of the dry mix.

Construction of Walls and Partitions

68-13. The required thicknesses and systems for construction for walls, partitions, and surfaces inclined fifteen degrees or less from the vertical, for fire-resistive construction of any required value, shall conform to the provisions of the following sections of this chapter dealing therewith, except as otherwise required in chapters 61, 73, and 74 of this code. Gypsum shall not be used for exterior walls or as a fire-protective covering for that portion of any member which is in an exterior wall or below grade, except for ceilings which are part of a floor system.

68-14. Four hour fire-resistive walls or partitions shall include walls of the following construction:

Brick, solid wall, eight inches thick.

Brick, hollow wall, twelve inches thick with three continuous vertical widths; or eight inches thick, plastered both sides.

Plain concrete, eight inches thick.

Reinforced concrete, six inches thick.

Solid concrete units, eight inches thick, plastered one side.

Hollow concrete units, two cells in wall, thickness, twelve inches thick; or eight inches thick, plastered both sides.

Hollow clay tile, two units and three cells in wall thickness, twelve inches thick, or load bearing tile, two cells, eight inches thick, plastered both sides.

Hollow units of clay, concrete, or gypsum faced with brick, stone, terra cotta, or cast stone, twelve inches total thickness; or eight inches thick, plastered one side.

68-15. Three hour fire-resistive walls or partitions shall include any walls permitted under section 68-14 or walls of the following construction:

Plain concrete, seven inches thick.

Reinforced concrete, five inches thick.

Solid concrete units, eight inches thick.

Hollow concrete units, twelve inches thick.

Hollow concrete units, eight inches thick, with one and one-half inch thick outer shell.

Hollow clay tile, three cells in wall thickness twelve inches thick.

Hollow gypsum single units, eight inches thick.

Hollow units of clay, concrete, or gypsum faced with brick, stone, terra cotta, or cast stone, eight inches total thickness.

68-16. Two hour fire-resistive walls or partitions shall include any of the walls permitted under sections 68-14 and 68-15, or walls of the following construction:

Brick, solid wall, three and three-fourths inches thick, plastered both sides.

Brick, hollow wall, eight inches thick.

Plain concrete, six inches thick.

Reinforced concrete, four inches thick.

Cast-in-place gypsum poured four inches thick, or hollow units three inches thick, plastered both sides.

Solid concrete units, six inches thick.

Hollow concrete units, eight inches thick; or four inches thick, plastered both sides.

Hollow clay tile, three cells in wall thickness, eight inches thick; or two cells in wall thickness, eight inches thick, plastered one side; or two cells in wall thickness, six inches thick, plastered both sides.

Solid plaster partition on metal studs and metal lath two inches thick.

68-17. One hour fire-resistive walls or partitions shall include any of the walls permitted under sections 68-14 to 68-16 or walls or partitions of the following construction:

Brick, three and three-fourths inches thick, or two and one-fourth inches thick, plastered both sides.

Concrete, three inches thick.

Gypsum, solid or hollow units, three inches thick, or solid units two inches thick, plastered both sides.

Solid concrete units, three inches thick.

Hollow concrete units, four inches thick; or three inches thick, plastered both sides.

Hollow clay tile, three and three-fourths inches thick; or load-bearing tile three inches thick, plastered both sides.

Hollow partition of either non-combustible or combustible studding, with metal lath and three-fourths inch of plaster; or gypsum lath and one-half inch of plaster, on both sides. Joints of gypsum lath shall be covered with strips of metal lath at least three inches wide.

68-18. The minimum wall thicknesses, required by the preceding sections of this chapter, shall not be reduced or cut into. Bearing walls shall comply in all respects with the requirements of chapter 73 of this code. A separation of not less than four inches of solid masonry shall be provided in all walls between combustible members which may enter such walls from opposite sides.

Construction of Floors, Roofs, and Ceilings

68-19. The required thicknesses and systems of construction for floors, roofs and ceilings or any separating construction between stories, other than walls, for fire-resistive construction of any required value, shall conform to the provisions of the following sections of this chapter dealing therewith, except as otherwise required in the structural provisions of this code pertaining to buildings.

68-20. Four hour fire-resistive floors or roof systems, shall include:

Reinforced concrete slabs, six inches thick.

Solid masonry slabs or arches, six inches thick.

Hollow tile arches, ten inches thick, plastered on the underside and with a solid or loose floor fill of non-combustible material two inches thick.

Reinforced concrete joists with filler units of hollow tile, concrete, or gypsum, ten inches total thickness.

68-21. Three hour fire-resistive floor or roof systems shall include any system permitted under section 68-14 or the following:

Reinforced concrete slabs, four inches thick.

Reinforced gypsum slabs, for roofs only, four inches thick.

Solid masonry slabs or arches, four inches thick.

Hollow tile arches, plastered, eight inches thick for flat arches, six inches thick for segmental arches, with a floor fill of solid or loose non-combustible material, two inches thick.

Reinforced concrete joists with filler units of hollow tile, concrete or gypsum blocks, six inches, total thickness.

Reinforced concrete joists in combination with three inch reinforced concrete slab.

68-22. Two hour fire-resistive floor or roof systems shall include any system permitted under sections 68-14 and 68-15, or the following:

Reinforced concrete slabs three inches thick.

Reinforced gypsum slabs, for roofs only, three inches thick.

Reinforced concrete joists in combination with two and one-half inch thick reinforced concrete slab.

Reinforced concrete joists with filler units of hollow tile, concrete or gypsum blocks, five inches total thickness.

Steel joists with reinforced concrete slabs two and one-half inches thick protected on the underside by a ceiling of metal lath and plaster seven-eighths inch thick.

Steel joists with reinforced gypsum slabs for roofs only, two and one-half inches thick, protected on the underside by a ceiling of metal lath and plaster seven-eighths inch thick.

68-23. One hour fire-resistive floor or roof systems shall include any systems permitted under sections 68-14, 68-15 or 68-16, or the following:

Reinforced concrete slabs two and one-half inches thick.

Reinforced gypsum slabs for roofs only, two and one-half inches thick.

Reinforced concrete joists with filler units of hollow tile, concrete or gypsum blocks, four inches total thickness.

Steel joists with reinforced concrete slabs two and one-half inches thick, protected on the underside by a ceiling of metal lath and plaster three-fourths inch thick.

Steel joists with reinforced gypsum slabs, for roofs only, two and one-half inches thick, protected on the underside by a ceiling of metal lath and plaster three-fourths inch thick.

Steel or wood joists, fire-stopped, with double board floor having insulating layer between boards and protected on the underside by a ceiling of three-fourths inch of plaster on metal lath or one-half inch of plaster on gypsum lath. Joints of gypsum lath shall be covered with metal lath at least three inches wide.

68-24. For the purpose of fire-resistive value only, in any floor or roof construction not required to have a protective ceiling on the underside thereof, the required slab thickness may be reduced one-half inch if a protective ceiling of metal lath and plaster is applied thereto. The total thickness of a non-combustible floor finish applied directly to the floor construction, or two-thirds of the thickness of a non-combustible floor fill, where such fill is not required by this chapter, may be considered as part of the required fireproof thickness of floor construction. The minimum thickness for slabs cast-in-place shall be two and one-half inches.

Fire-protective Covering for Metal Members

68-25. The required thickness of fire-resistive materials for the fire-protective covering of metal structural members for any required fire-resistive value, shall conform to the provisions of the following sections of this chapter dealing therewith.

68-26. Four hour fire-protective coverings shall include:

For metal columns:
  Cast-in-place concrete, three inches thick.
  Cast-in-place gypsum, three inches thick.
  Brick, three and three-fourths inches thick.
  Hollow units of clay tile, four inches thick, plastered.
  Hollow units of concrete, four inches thick, plastered.
  Solid units of concrete, three inches thick, plastered.
For other metal members:
  Cast-in-place concrete, two inches thick.
  Hollow units of clay tile, three inches thick, plastered.
  Hollow units of concrete, three inches thick, plastered.
  Solid units of concrete, two inches thick, plastered.
For longitudinal reinforcement of concrete columns, beams, girders, and trusses.
  Concrete, one and one-half inches thick.
For reinforcement of slabs, joists and walls:
  Concrete, one inch thick.

68-27. Three hour fire-protective coverings shall include any covering permitted under section 68-26 or the following:

For metal columns:
  Solid units of gypsum, three inches thick.
  Hollow units of clay tile, three inches thick, plastered.
  Hollow units of concrete, three inches thick, plastered.
  Solid units of concrete, two inches thick, plastered.
  Hollow units of clay tile or concrete, four inches and two units thick, with staggered joints, not plastered.
For other metal members:
  Solid units of gypsum, three inches thick.
  Hollow units of clay tile, two inches thick, plastered.
  Solid units of concrete, two inches thick, plastered.
  Hollow units of clay tile or concrete, four inches thick and two units thick, with staggered joints not plastered.

68-28. Two hour fire-protective coverings shall include any covering permitted under sections 68-26 and 68-27 or the following:

For metal columns:
  Brick, two and one-fourth inches thick.
  Hollow units of clay tile, two inches thick.
  Solid or hollow units of concrete, two inches thick.
  Solid units of gypsum, two inches thick, no fill.
For other metal members:
  Cast-in-place concrete, one and one-half inches thick.
  Cast-in-place gypsum, one and one-half inches thick.
For reinforcement of slabs, joists, and walls:
  Concrete, three-fourths inch thick.

68-29. One hour fire-protective coverings shall include any covering permitted under sections 68-26, 68-27 or 68-28, or the following:

For metal columns:
  Hollow units of clay tile, two inches thick, no fill.
  Units of concrete, two inches thick, no fill.
  Portland cement, lime or gypsum plaster, one inch thick on metal lath.
For other metal members:
  Portland cement, lime or gypsum plaster, seven-eighths inch thick on metal lath.
For reinforcement of columns, beams, girders, and trusses:
  Concrete, one inch thick.

Facing Materials as Fire-protective Covering

68-30. Facing material may be considered as fire-protective covering when it meets the requirements of this chapter for fire-resistive materials.

68-31. When materials specified as masonry in section 73-1 of a minimum thickness of three and three-fourths inches are used for the facing of a building, such facing, where covering or inclosing a structural member shall be assumed to be effective for only one-half of the required fire-resistive value for such material and the remaining one-half shall be provided by additional fire-resistive material applied in accordance with the provisions of this chapter for fire-protective covering for metal members.

Construction of Fire-protective Covering

68-32. For beams, girders, and trusses, the covering shall be bedded solidly against the webs and flanges of the member and shall completely surround or enclose the member. The fire-resistive covering for columns shall surround or enclose the column, and all interior spaces between the covering and the column shall be filled with concrete or the same material as the required fire-resistive covering, except as otherwise specifically permitted by the word "no fill" under the provisions of this chapter for fire-protective covering for metal members. Masonry units in all cases shall be well anchored or bonded by one of the following methods:

1. Shape of unit giving positive anchorage to structural member or to other units.
2. Wall ties of corrugated metal, or strips of metal mesh, laid in all the horizontal joints, where such joints are ten inches or more apart.
3. Metal clips providing a mechanical tie between units.
4. Outside tie wires not smaller than No. 10 W. & M. gauge, with at least one tie around each course, and protected by plaster.

Gypsum units shall be anchored by method No. 3 or No. 4. All joints in unit coverings shall be solidly filled with mortar. Before cast-in-place concrete or gypsum is placed, all members to be protected with these materials shall be wrapped with woven or welded wire mesh weighing not less than one and one-half pounds per square yard, or with wire not smaller than No. 12 W. & M. gauge spaced six inches on centers, or provided with fabricated flange reinforcement of equivalent weight.

68-33. Units of burned clay or shale, or concrete when used as a fire-protective material, shall be bedded with full joints in mortar equivalent in strength to No. 3 or No. 4 mortar, as provided in chapter 73 of this code. Units of gypsum shall be bedded with full joints in gypsum mortar composed of one part of neat gypsum plaster and not more than three parts of clean, sharp, well graded sand by weight.

68-34. The fire-protective covering beyond the edge of any beam flange, less than three-fourths inch thick at the thin edge may be reduced to one and one-half inches when such covering is solid concrete.

68-35. The minimum thickness of fire-protective covering required by this chapter shall be measured exclusive of any plaster, and shall apply to the thickness of covering over metal members under stress, not including rivet heads.

68-36. Pipes or ducts, excepting electric conduits, shall not be embedded in the required fire-protective covering of any members; provided, however, that where steel beams or girders are embedded in concrete, the pipes, or conduits may rest on the top flanges of such beams or girders but shall not encroach upon the required covering for the sides and bottom.

Standard Fire Tests

68-37. Wherever in the building provisions of this code reference is made to a standard fire test, such test shall be construed to mean and is required to mean a test conducted in accordance with all of the provisions of the "Standard Specifications for Fire Test of Building Construction and Materials (A. S. T. M. Designation C19-33) of the American Society for Testing Materials."

Violation of Chapter Provisions

68-38. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 69

FIRE DOORS

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69-32. Penalty

69-1. Any movable barrier which may be opened or closed to allow or to prevent passage through a doorway in a wall or enclosure, which wall or enclosure is required by this code to be of fire-resistive construction, shall be classed as a fire door. Wherever the words "fire door" or "fire-resistive door" are used in this code, they shall be construed to mean and are required to mean acceptable protection assemblies consisting of the following:

(a) Door.
(b) Frame, where required.
(c) Sill, where adjoining floors are combustible.
(d) Hardware.
(e) Automatic closing device, where required.
(f) Self-closing device, where required.
(g) Thermostatic releasing device, where required.
(h) Guides and all necessary operating parts of rolling or sliding doors.
(i) Safety governors, on vertically descending underbalanced doors.
(j) Protection, for sliding doors and around counterweights.
(k) Automatic releases, for power operated doors.

69-2. All fire doors shall be classified as of the following four types:

(a) Double standard fire doors.
(b) Standard fire doors.
(c) Sixty minute fire-resistive doors.
(d) Forty-five minute fire-resistive doors.

The relative fire-resistive value of the four types of fire doors shall be deemed to decrease in the order given in this section.

Qualifications

69-3. Every required fire door, including the frame, hardware, and operating mechanisms, shall be an exact duplicate, except in size, of a model assembly which has been subjected to the standard fire test described in chapter 68 of this code for the period of time and with the performance under test as hereinafter required. That the door assembly is a true duplicate, except in size, of a duly tested model, shall be evidenced by an attached label issued by the testing laboratory, which label shall attest that such door assembly meets the requirements of this code for the specified type.

69-4. A double standard fire door shall be an assembly providing a complete standard fire door on each face of a wall.

69-5. The test models for all standard fire doors shall have been subjected to the standard fire test for a period of not less than sixty minutes, followed within two minutes by the fire stream test and shall have at least equalled the standards of performance which are hereinafter required.

69-6. The test models for all sixty minute fire-resistive doors shall have been subjected to the standard fire test for a period of not less than sixty minutes, followed within two minutes by the fire stream test and shall have at least equalled the standards of performance which are hereinafter required.

69-7. The test models for all forty-five minute fire-resistive doors shall have been subjected to the standard fire test for a period of not less than forty-five minutes, followed within two minutes by the fire stream test and shall have at least equalled the standards of performance which are hereinafter required.

69-8. All types and kinds of fire doors, qualified or hereafter qualifying as of the several types required by the building provisions of this code, shall be considered to have withstood successfully the required tests only in case of performance under said tests, as follows:

(a) The automatic closing device operated promptly as intended, the door closed properly and was tightly held in the closed position. Automatic closing devices may be tested and approved without subjecting the door assembly to the standard fire test.

(b) The door and its assembly shall have complied with at least one of the following two requirements:

The said fire door and its arrangement has not permitted the passage of fire and flame through or around said door.

The said fire door and its arrangement has not permitted the transmission of heat through the door, so as to cause the temperature on the unexposed side of the fire door to exceed five hundred degrees Fahrenheit in the case of standard fire doors, eight hundred degrees Fahrenheit in the case of sixty-minute and forty-five minute fire doors.

(c) In order that the fire door and its arrangement comply with the standard fire test and the herein prescribed fire stream test, said fire door must not be materially weakened either in the door structure or in its arrangement on the fire wall after its exposure to the standard fire test and the fire stream test.

69-9. All required tests shall be made by a laboratory or engineering experimental station qualified as required by chapter 68 of this code.

Type Requirements

69-10. Except as otherwise provided by this code, the required type of fire door for any doorway shall be determined from the required fire-resistive value of the wall, separation or enclosure in which such doorway occurs in accordance with the provisions of the following sections of this chapter dealing with type requirements.

69-11. Every doorway in a required standard fire-division wall shall be protected by double standard fire doors; provided, however, that where a vestibule or stair enclosure intervenes between adjacent fire-division areas, each doorway in such vestibule or enclosure shall be protected by a standard fire door.

69-12. Every doorway in a required four hour fire-resistive separation between occupancies, shall be protected by double standard fire doors, except as otherwise provided in section 69-11 for doorways in vestibules and stair enclosures.

Every doorway in a required four hour fire-resistive separating wall, other than a separation between occupancies, shall be protected by standard fire doors.

69-13. Every doorway in a required three hour fire-resistive separating wall shall be protected by sixty minute fire-resistive doors; provided, however, that forty-five minute fire-resistive doors shall be permitted in doorways in three hour fire-resistive enclosures of vertical shafts.

69-14. Every doorway in a required two hour fire-resistive wall or enclosure shall be protected by forty-five minute fire-resistive doors.

69-15. Every doorway in a required one hour fire-resistive wall or enclosure shall be protected by forty-five minute fire-resistive doors.

69-16. Doorways affording egress to an exterior emergency exit stairway or fire escape shall be protected by forty-five minute fire-resistive doors.

Construction of Doors

69-17. Except as hereinafter provided, all fire doors, except tin-clad and metal-clad doors shall be composed entirely of metal or of metal and a core of non-combustible insulating material; provided, however, that combustible or destructible washers may be employed to prevent distortion by expansion and that fusible link releasing devices shall be permitted. Any fire door, except a steel plate door, otherwise meeting all of the requirements of this chapter for construction and performance under test, may have a decorative veneer applied to either or both sides of such approved door and the application of such veneer shall not be deemed to affect the approval or classification of such door, for the purposes of the building provisions of this code.

69-18. Where frames are used in masonry or concrete walls, eight inches or more in thickness, they shall be secured by anchors built into the walls or bolted through the walls. Frames shall be required in other walls and shall be secured at the floor and through extension members to the ceiling. Sills shall be bedded in cement mortar and shall be anchored to the walls or frames. Where no frames or sills are used, all tracks and binding or supporting hardware shall be secured to the walls by bolts, one of which, at each point of support, shall extend through the wall.

69-19. *Kinds of doors.* Standard fire doors shall be tin-clad three-ply wood core doors, sheet metal, and hollow metal doors, steel plate doors and rolling steel shutters. All such doors, except rolling steel shutters, shall be hinged or arranged to slide or roll, either singly or in pairs.

Construction. Where frames or sills are used they shall be secured as required by section 69-18. Where standard fire doors are permitted to be installed without frames, such doors shall lap four inches over the opening at both sides and at the top and means shall be provided to bind the doors firmly to the wall. No glass panels shall be permitted in standard fire doors. Adequate provision, by means of slotted holes or combustible or destructible washers or inserts, shall be made to prevent distortion from unequal expansion. Where slots in sills are used as guides, such slots shall be closed when doors are open and such closing member shall operate with the automatic door closing mechanism. All such mechanism shall be subject to the approval of the division marshal in charge of the bureau of fire prevention.

Hardware and operating devices. Doors held normally in the open position shall be provided with an automatic closing device containing a fusible link and tripping arrangement which at temperature of one hundred eighty degrees Fahrenheit or less, shall actuate the closing mechanism or containing a thermostatic device which shall actuate said mechanism as a result of change in the rate of rise of temperature. Such link shall be exposed within the area of the opening when the door is in the open position. Doors held normally in the closed position shall be provided with door checks which may be set to hold the doors open and containing a one hundred eighty degree Fahrenheit or lower temperature fusible link or rate of rise thermostatic releasing device. Single swinging doors shall be provided with three point latches having not less than a three-fourth inch engagement with the frames and sills. Doors swinging in pairs shall be provided with astragals. The active door of the pair shall have three point latches and the other door shall have two point latches engaging at top and bottom. An interference device, to prevent the wrong door from closing first, shall be secured to the wall or frame. Vertically descending doors and rolling shutters shall be provided with safety devices for controlling the speed of descent.

69-20. *Kinds of doors.* Sixty minute fire-resistive doors shall be tin-clad three-ply wood core doors, sheet metal, hollow metal, and steel plate doors. All such doors shall be hinged either singly or in pairs; provided, however, that sliding doors opening either horizontally or vertically shall be permitted in elevator hatchway openings.

Construction. No glass panels shall be permitted in sixty minute fire-resistive doors. Frames and sills, as required under section 69-18 shall be provided for all sixty minute fire-resistive doors. Adequate provision shall be made to prevent distortion from unequal expansion, as required for standard fire doors.

Hardware and operating devices. All sixty minute fire-resistive doors shall be held normally in the closed position and except in elevator hatchway openings, shall be provided with a device which may be set to hold the doors open and containing a one hundred eighty degree Fahrenheit or lower temperature fusible link or rate of rise thermostatic releasing device. Latches for single swinging doors and latches and interference devices for doors swinging in pairs shall be the same as required for standard fire doors.

69-21. *Kinds of doors.* Forty-five minute fire-resistive doors shall be metal-clad wood or other more fire-resistive core doors, sheet metal, hollow metal and steel plate doors. All such doors shall be hinged, either singly or in pairs; provided, however, that sliding doors opening horizontally or vertically shall be permitted in elevator hatchway openings.

Wired glass panels. Panels of wired glass, not exceeding one hundred forty-four square inches in individual and total area shall be permitted in any forty-five minute fire-resistive door used in a doorway in a vertical shaft inclosure.

Hardware and operating devices. All forty-five minute fire-resistive doors shall be held normally in the closed position, and except in elevator hatchway openings, shall be provided with a device or devices which may be set to hold the doors open and containing a one hundred eighty degree Fahrenheit or lower temperature fusible link or rate of rise thermostatic releasing device. Doors swinging in pairs shall be equipped with astragals and interference device. Single point latches shall be permitted for single swinging doors and for the active door of a pair of doors and two point latches shall be required for the inactive door of a pair. [Amended. Coun. J. 5-2-40, p. 2414.]

69-22. Steel plate doors, qualifying as standard fire doors or sixty minute fire-resistive doors shall be constructed of plates not thinner than No. 12 U. S. gauge. Forty-five minute fire-resistive steel plate doors shall be constructed of plates of not less thickness than No. 14 U. S. gauge.

69-23. Openings in required fire-division walls and required four hour fire-resistive walls or construction, for the passage of ventilating ducts or enclosed conveyers shall be protected by closing members at least equal in fire-resistive value to the type of fire door required for any doorway in such location; provided, however, that in lieu of such a closing member, a sprinkler head connected with a standard system of automatic sprinklers, may be installed inside such duct or enclosure at such wall or separating construction.

69-24. Wherever in the building provisions of this code, the words "rate of rise thermostatic releasing device" or the words "automatic heat actuated controlling device" or the words "heat actuated device" or the words "thermostatic releasing device" are used, said words are hereby defined to mean and require a device which is constructed of such material and so arranged that said device is placed in operation as a result of a difference in the rate of rise of the temperature rather than as a result of a change in the temperature.

69-25. All types and kinds of fire doors, required by the building provisions of this code shall be limited in size to the maximum dimensions and areas permitted by the following table:

Kind of door	Area (Sq. Ft.)	Maximum height of opening (Feet)	Maximum width of opening (Feet)
Tin-clad, three-ply wood core, counterbalanced	—	12	8
Tin-clad, three-ply wood core, sliding	120	12	12
Tin-clad, three-ply wood core, pairs swinging	—	12	10
Tin-clad, three-ply wood core, single swinging	—	12	6
Metal-clad, two-ply wood core, sliding	—	10	10
Metal-clad, two-ply wood core, counterbalanced	—	10	8
Metal-clad, two-ply wood core, pairs swinging	—	10	10
Metal-clad, two-ply wood core, single swinging	—	10	6
Sheet metal, pairs sliding	120	12	12
Sheet metal, single sliding	80	10	10
Sheet metal, pairs swinging	80	10	10
Sheet metal, single swinging	—	10	6
Hollow metal, sliding	—	8	8
Hollow metal, pairs swinging	—	8	8
Hollow metal, single swinging	—	8	4
Steel plate	40	10	4
Rolling steel shutters	80	12	12

69-26. Sliding steel plate doors, vertically descending doors of any type, and rolling steel shutters are hereby prohibited for use in any opening, which is a required means of exit. All doors used in connection with required means of exit shall swing in the direction of egress except as horizontally sliding doors may be permitted under other sections of this code pertaining to buildings. Doors from individual rooms to hallways or corridors shall swing in the direction of egress where such rooms are used for the purposes of public assembly or where such rooms are occupied by fifty or more persons or where such rooms contain any hazardous occupancy. All doors used in connection with exits shall be so arranged as to be readily opened at all times from the side from which egress is made without the use of a key or any separate operating device.

69-27. All required fire doors shall be protected against mechanical injury or obstruction which would interfere with the operation thereof in any emergency.

69-28. Sliding doors shall be protected by a substantial screen, railing or other guard which will prevent the contact of furniture, stock or other material with such doors. All counterweights, guides, and tracks shall be provided with enclosures or guards to prevent interference with or obstruction thereof. Slots in sills or floors shall have automatic closing members which shall form substantial trucking thresholds when doors are open. All such mechanism shall be subject to the approval of the division marshal in charge of the bureau of fire prevention.

69-29. Swinging doors shall have floor stops or other devices to prevent such doors from swinging through an arc of more than ninety degrees.

69-30. Fire doors of types and kinds other than those required by any described in this chapter, shall be permitted as acceptable substitutes for the types and kinds required by this chapter, only if such substitutes shall have been proven or shall be proved by the standard fire test to be at least equal in fire-resistive value and performance to the required types and kinds.

69-31. Non-combustible doors, where required or permitted by the building provisions of this code, shall be composed or constructed entirely of non-combustible materials or with combustible cores enclosed in metal or asbestos or in metal and asbestos. A finish or veneer of combustible material not more than one-fourth inch thick shall be permitted, if applied to a non-combustible core or if applied to a metal or asbestos enclosure surrounding a combustible core. Frames and sills for such doors shall be entirely of non-combustible materials or shall be of the same construction as such doors.

Violation of Chapter Provisions

69-32. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 70

LOADS AND STRESSES

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Loads

70-1. All buildings and structures shall be designed for the safe support of live loads in addition to all dead loads as specified in section 70-10 and wind loads as specified in the sections of this chapter dealing therewith. Minimum live loads for which buildings and structures may be designed for each type of occupancy are given in the following table with permissible reductions as specified in sections 70-6 to 70-9 inclusive. These requirements for live loads are to be applied to every portion of each floor according to occupancy.

Minimum Live Loads to be Used in Design

Building classification	Occupancy	Minimum live loads (pounds per sq. ft.)
Single dwellings	All purpose	40
Multiple dwellings	Habitable rooms and private utility rooms	40
	Public assembly rooms, public corridors, and stairways	100
Hospitals	Patients' rooms or wards	40
	Public assembly rooms, corridors, and stairways	100
Business units	Office space, class rooms, bowling, billiard, and pool rooms, except spaces for spectators	50
	Exhibition rooms, public assembly rooms with fixed seats	75
	Auto truck storage space, bleachers and grandstands, bus terminal space, gymnasium, loft space, manufacturing space, power plant space, public assembly space without fixed seats, public corridors and stairways, stores, retail and wholesale	100

Hazardous use units	All purpose	100
Garages	First and second floors	100
	Floors above the second	50[*]
Theaters	Private offices	50
	Spaces with fixed seats	75
	Other public rooms and public spaces	100
Open air assembly units	All purpose	100
Public assembly units	Spaces with fixed seats	75
	Other public rooms and public spaces	100
Churches	Class rooms, choir and vestry rooms	50
	Spaces with fixed seats	75
	Other public rooms and public spaces	100
Other buildings and structures	All purpose	100

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[*] These floors are to be placarded as follows: "This floor to be used for the storage of passenger automobiles only."

70-2. Any space to be occupied by tanks, special equipment, or by driveways, private sidewalks, loaded truck storage space, or tracks shall be designed for the actual weight of the superimposed loads and for impact. where this exceeds the minimum requirements, but the space occupied by such equipment need not be figured for any other live load.

70-3. Floors of offices, or other space, in which safes are used shall be designed to accommodate a concentrated load of two thousand pounds on any selected area three by three feet, but in this calculation no other live load shall be considered on the same members at the same time.

70-4. Floors of passenger auto storage space shall be designed for a concentrated load of three thousand pounds on any area four feet by four feet square, but in this calculation, no other live load shall be considered on the same members at the same time.

70-5. Roofs shall be designed for a live load, acting normal to the roof surface, of twenty-five pounds per square foot, including wind load. No reduction shall be made in roof loads, as specified in section 70-6 or on account of the type of construction, or of ratio of dead to live load.

70-6. Every slab or joist shall be designed for the full live load specified in section 70-1 except as follows:

When the dead load exceeds the live load, the live loads specified in section 70-1 may be reduced to a load obtained by multiplying by the ratio of the specified live load to the dead load, but the live load so computed shall in no case be less than sixty-six and two-thirds per cent of live load as specified in section 70-1.

70-7. Where floor load placards are required by the building provisions of this code, floors designed in accordance with this chapter shall be placarded for the full live load specified and not for the reduced load.

70-8. Beams, girders and trusses shall be designed for a live load not less than as provided in sections 70-1 to 70-6, except that a further reduction of the live load on floors shall be permitted on the basis of tributary floor area, but no reduction shall be permitted on the live load on tributary roof area, in accordance with the following schedule:

Tributary floor area	Allowable reduction (per cent)
Not more than 100 square feet	0
More than 100 square feet and not more than 200 square feet	5
More than 200 square feet and not more than 300 square feet	10
More than 300 square feet	15

70-9. The total live load carried by columns, piers, walls and foundations, may be reduced according to the following schedule, the reductions being based on the live loads either as specified in section 70-1 or as computed in accordance with section 70-6 applied to the entire tributary floor and roof areas:

Members carrying	—— Allowable reduction —— For storage and manufacturing units (per cent)	For all other space (per cent)
The roof	0	0
1 floor and roof	15.0	15
2 floors and roof	17.5	20
3 floors and roof	20.0	25
4 floors and roof	22.5	30
5 floors and roof	25.0	35
6 floors and roof	25.0	40
7 floors and roof	25.0	45
8 or more floors and roof	25.0	50

70-10. In addition to live loads and to wind loads to be provided for, each portion of every structure shall be designed for the entire dead weight of the structure superimposed upon it.

Wind Loads

70-11. The inclosing walls and surfaces of every building or structure shall be designed to resist a horizontal wind pressure acting in any direction, and on either side of the enclosing wall, or surface in the amounts specified in sections 70-12 and 70-13 in addition to all other loads coming upon them.

70-12. The wind load on the exterior structural walls, slabs, joists, and studs shall be taken as not less than twenty-five pounds per square foot, up to an elevation of two hundred seventy-five feet above the sidewalk, and as not less than thirty-five pounds per square foot above that elevation. In buildings of skeleton construction, panel or other walls supported on the structural frame shall be designed to carry the wind loads specified in this section and shall be securely attached to the frame so as to insure complete structural stability.

70-13. The wind load on beams, girders, trusses, posts, columns, and piers supporting the exterior walls, slabs, joists, and studs, the wind load acting on the structural framework, and the wind load considered as an overturning force shall be taken as not less than the values given in the following table:

Wind Loads

For structural members supporting a tributary surface	On a surface less than 275 feet above grade (pounds per sq. ft.)	On a surface more than 275 feet above grade (pounds per sq. ft.)
Not more than 100 square feet	25	35
More than 100 square feet and not more than 200 square feet	25	32½
More than 200 square feet	25	30
For structural framework	25	30
For overturning forces	25	30

70-14. Walls and partitions shall not be taken into consideration as resisting wind loads, except that walls, or equivalent bracing continuous from the foundations to the highest level where they are considered effective, may be used in the design; provided, however, that the effect of openings in such walls is taken into account; and that such walls are located so as to be effective for the purpose of resisting wind.

70-15. For the design of sloping roofs, the provisions of section 70-5 shall govern.

70-16. In no case shall the overturning moment, due to wind pressure, exceed seventy-five per cent of the moment of stability of the building due to the dead loads only. Dead loads may include properly anchored foundations.

70-17. All structures, such as signs, tanks, tank towers, radio towers, and similar structures shall be designed so as to resist safely a wind pressure of thirty pounds per square foot on the vertical projection of every surface exposed to the action of the wind. This does not apply to ordinary masonry enclosed towers for which wind load is given by section 70-11.

70-18. All flagpoles shall be designed to resist a wind pressure of one and one-half pounds per square foot of flag area applied at the top of the pole and an additional pressure of fifty pounds per square foot on the vertical projection of the pole and shall be so braced, supported, or stayed as to withstand this wind pressure.

Materials and Stresses

70-19. All structural members in buildings shall be of the proper dimensions, and with the proper reinforcement, if of reinforced concrete, to carry the superimposed loads at stresses that do not exceed the values permitted in the building provisions of this code. Stresses due to live and dead loads combined shall not exceed the allowable values as stated in the various sections. Stresses produced by live, dead, and wind loads combined, may exceed the allowable values by fifty per cent, except for rivets or welds in wind connections, which may exceed the allowable value by thirty-three and one-third per cent; provided, however, that the resulting sections shall be not less than those required to carry the combined live and dead loads without considering the wind load.

70-20. Stresses in structural members shall be computed in general, from the usual mechanics of static structures, taking into account the actual conditions of restraint at supports and connections. For members carrying walls without openings, the load causing flexure may be considered as that within a triangle whose base is the span of the member and with base angles of sixty degrees.

70-21. For the more complex structures, moments shall be taken as given elsewhere in the building provisions of this code for particular conditions. The moments specified for reinforced concrete structures shall apply equally to any structure with rigidly constructed joints.

Special Design and Construction Provisions

70-22. Where structures rest on foundations carried to rock, so that settlement is precluded, the structural framework may be designed for smaller moments than those specified herein; provided, however, that a complete analysis of forces and stresses, including those in the foundations, shows that the moments used in the design of each member are the greatest moments that may exist in that member under the required design loads, distributed in the most unfavorable manner that may reasonably occur in the use of the structure and that the maximum stresses allowed in this chapter will not be exceeded. The analysis required above shall take account of wind loads as well as of static loads and of all combinations of loads that may exist.

70-23. Skylights, monitors, and similar roof constructions shall be designed to meet the same structural provisions as required for the roof of the building of which they form a part.

70-24. Where the construction or alteration of a building requires that an existing construction or the street or earth adjoining the new building, be temporarily or permanently supported, the sheeting, shoring, underpinning, or retaining wall, shall be designed for the loads they have to support using materials of the quality specified in the building provisions of this code for new buildings. For temporary construction, the stresses specified in the building provisions of this code may be increased twenty-five per cent greater than the stresses permitted in new buildings. If such sheeting, shoring, or underpinning is to remain in place over one year, no increase in design stresses shall be taken. Sheeting, shoring, or underpinning designed for increased stresses and held in place over one year shall be strengthened at the end of the year to reduce all stresses to the values permitted for new buildings. Plans prepared by the architect or engineer of the project together with the computations for and details of such sheeting, shoring, underpinning, or retaining walls shall, upon demand by the commissioner of buildings, be presented for his approval.

Violation of Chapter Provisions

70-25. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 71

FOUNDATIONS

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71-1. Every building or structure shall rest upon one or more of the following types of foundations:

(a) Footings on soil.
(b) Wood piles.
(c) Concrete or composite piles.
(d) Metal pipe piles.
(e) Foundation piers or caissons.
(f) Foundation columns.
(g) Steel beams used as piling.

71-2. Foundations may not project into, or encroach upon public ways, except as provided herein.

The commissioner of buildings may issue permits for buildings for which it is contemplated that there shall be projections of the foundation, or a part or parts thereof, into a public way under the following conditions:

(1) Where such public way is sixteen feet or more in width, such foundations shall have no projection at the sidewalk or alley grade, but may project at the ratio of four and one-half inches to one foot for each one foot of depth that such foundation may extend below the sidewalk or alley grade, to a maximum projection of thirty-six inches at a depth eight feet below said sidewalk or alley grade.

(2) Such foundations, or such part or parts thereof, which are higher than a point twenty feet below city datum and are lower than a point eight feet below the sidewalk or alley grade, may project into such public way for a distance not to exceed thirty-six inches for such part of their extent as is included between a point eight feet below said sidewalk or alley grade and a point twenty feet below said city datum; and

(3) Where said public way is less than sixteen feet in width, foundations, or any part or parts thereof, may project into such public way at a ratio of four and one-half inches of projection to one foot of depth, but no foundation, or part or parts thereof, shall be built nearer than five feet to the middle line of such public way.

No foundation, or any part or parts thereof, shall project into a public way in such manner as to add area to the superstructure of any building or structure.

The construction of caisson and other types of foundations, part or parts of which may extend to a greater depth than twenty feet below city datum, shall conform to the requirements of this section as hereinbefore contained in such part or parts as are higher than twenty feet below city datum and lower than eight feet below the sidewalk or alley grade and in such part or parts as are higher than eight feet below the sidewalk or alley grade, but such part or parts of such last mentioned foundations as are constructed lower than twenty feet below city datum may project into a public way so far as the commissioner of buildings deems necessary for the stability of the building or structure of which they are a part.

It is expressly made a condition in the issuance of any permit for the construction of a building or structure whose foundations, or any part or parts thereof, project into the public way at any point higher than twenty feet below city datum, that if during the construction of or after the completion of such structure or building, the said foundation, or any part or parts thereof, shall project in such a manner as to interfere with or be an obstruction to the building of, maintaining, or operating of any public utility now or hereafter to be constructed, or any part or parts of any construction in connection therewith, then such projecting foundations, part or parts thereof, shall be subject to removal upon notice from the commissioner of public works so to remove them. The commissioner of public works shall give written notice, allowing a reasonable length of time for the purpose of making the changes required thereunder, and such time limit shall be specified in the notice. The owner or owners of the said building or structure shall proceed immediately upon receipt of said notice to remove all projecting part or parts of such foundations without any expense, loss or damage accruing to the city. Upon failure of such owner or owners to comply with said notice by beginning the work required thereunder within thirty days after the receipt of such notice or upon failure to complete same within such reasonable time thereafter as the commissioner of public works shall deem sufficient, the commissioner of public works may proceed at once to remove such projecting part or parts of such foundations and the city may recover the cost and expense of such removal, unless otherwise reimbursed, by an action at law against the owner or owners, or lessee or lessees of such premises. [Amend. Coun. J. 5-29-41, p. 4937.]

71-3. *Exposure.* All footings exposed to frost shall be carried down at least four feet below the adjoining ground surface unless bearing upon solid rock; except that a reinforced concrete slab foundation extending over the entire area below a one story building, which building does not exceed four hundred square feet in area, shall be permitted at a lesser depth below the adjoining ground surface.

Freezing weather. Footings shall not be placed in freezing weather unless adequate precautions are taken against frost action. Footings shall not be placed upon frozen soil.

Footings and Foundations

71-4. Footings and foundations shall be built of masonry or concrete, designed in accordance with chapter 73 of this code, or of reinforced concrete designed in accordance with chapter 74 of this code, or of structural steel or other metal designed in accordance with chapter 75 of this code and encased in concrete with at least three inches of covering over all steel. All materials used shall comply with the requirements for such materials given in chapters 73, 74, and 75 of this code.

71-5. All foundation plans shall show the maximum pressure in pounds per square foot transmitted to the soil by footings and foundations. The pressure on various soils shall be taken in accordance with the following table:

Loads Permitted on Various Soils

Type of soil	Maximum load per square foot
Filled ground or loam	500 pounds
Sand or clay having an admixture of loam, and containing not over 14 per cent of moisture by weight	1,500 pounds
Dry yellow clay	3,500 pounds
Soft blue clay containing not over 14 per cent of moisture by weight	3,000 pounds
Stiff blue clay containing not over 14 per cent of moisture by weight	4,500 pounds
Stiff clay with an admixture of gravel and stone	4,000 pounds
Sand and clay mixed	3,000 pounds
Coarse sand, or fine gravel	6,000 pounds
Fine wet sand	3,000 pounds
Fine wet sand confined by solid walls of masonry or concrete, or by sheating extending the full depth of the layer and designed to resist the lateral pressure	6,000 pounds
Coarse gravel	10,000 pounds
Hardpan	12,000 pounds
Hardpan extending under entire area of structure	15,000 pounds
Solid rock	100 tons

When the classification of soft soil or stiff soil is in question it shall be determined from the average results of three tests in the air at seventy degrees Fahrenheit in a Hubbard stability testing machine, as described in the technical papers included in the proceedings of the A. S. T. M., volume 25. Elastic soil showing a load of less than forty pounds shall be considered soft soil, and soil showing a load of forty pounds of more shall be considered stiff soil.

71-6. When soils decrease in carrying capacity below the underside of the footing, the bearing value selected shall be that of the weakest soil encountered within ten feet from the bottom of the footing, adjusted for the depth below the footing, using an angle of spread of not more than thirty degrees from the vertical.

71-7. Hardpan is defined as a very dry mixture of sand, pebbles, and clay, naturally cemented, with or without an admixture of boulders, difficult to remove by picking, and containing no pliable material.

71-8. The values given in the table in section 71-5 are for average conditions of soil. In case there is uncertainty as to the soil being of average bearing value, or as to the classification of any given soil, the commissioner of buildings shall permit or may require a test to be made, described as follows:

> Soil bearing test shall be made by loading no less than two square feet of soil at the elevation of the bottom of the proposed footing. The initial test load shall be not more than fifty per cent of the desired working load on the soil, and each further increment shall not exceed five hundred pounds per square foot of soil under test. A continuous record of the settlement shall be made to determine the point at which the rate of settlement increases in greater proportion than the increment of loading. The point where this rapid increase of settlement takes place shall be called the "yield point." The working load shall be taken as one-third of the load at the above described yield point. The ultimate settlement shall be taken as twice the settlement recorded for the load taken as the working load. A drill hole shall be made in the bottom of the test pit, no less than fifteen feet in depth below the elevation of the test. Proper samples shall be taken at frequent intervals to determine the character of the strata for this depth, and the permissible working load under any and all footings shall be determined by a registered engineer or architect and shall be approved by the commissioner of buildings.

71-9. Except in the case of bearing on rock, the difference in elevation of the bottoms of any two footings shall be such that a line drawn between the lower adjacent edges shall not incline at an angle more than the angle of repose of the soil, or greater than forty-five degrees with the horizontal, unless provisions are made by means of retaining walls, or otherwise, adequately to restrain the soil.

Wood, Concrete and Composite Piles

71-10. Piles may be jetted through sand strata. Where jetted piles are seated in a sand stratum, at least one drill hole shall be sunk in the area, at least ten feet below the bottom of the piles. If the sand stratum continues to the bottom of the drill hole or is replaced by gravel, stiff clay, or its equivalent, no impact driving shall be required. A load test of piles which are jetted to a bearing shall be made at least every seventy feet in each direction and not less than two such tests shall be made in any case.

71-11. *Concrete.* Concrete having a minimum strength of two thousand pounds per square inch shall be used for all pile caps and shall contain not less than six bags of cement per cubic yard of concrete.

Reinforcement. Reinforcing or steel in caps shall be supported at least three inches above the tops of piles and reinforcing shall have a covering of at least three inches of concrete.

Design. Concrete caps shall be designed in accordance with the provisions of chapter 74 of this code.

71-12. Wood piles shall be single sticks cut from sound, live trees and shall be free from defects, such as injurious shakes, unsound or loose knots, or decay, which materially impair their strength or durability. Piles must be butt-cut above the ground swell. A straight line drawn from the center of the butt to the center of the top shall be within the body of the pile at all points. Piles shall have an approximately uniform taper from butt to tip, and shall be not less than six inches in diameter at the small end, and twelve inches in diameter at the cut-off.

71-13. Concrete and reinforcing used in concrete, or composite piles, shall comply with the requirements of chapter 74 of this code. It is further required that such concrete shall be of plastic concrete consistency and shall have a minimum compressive strength of two thousand pounds per square inch and shall contain not less than six bags of cement per cubic yard of concrete. The diameter or least lateral dimension of any concrete pile shall be not less than eight inches at the point and not less than twelve inches at the finished top. The length shall not exceed fifty times the average diameter. Precast concrete piles shall be designed and reinforced to permit handling and driving without injury. The amount of longitudinal reinforcing employed shall be not less than two per cent, nor more than four per cent. Hoops or ties shall be not less than one-fourth inch in least dimension and spaced not farther apart than twelve inches. except that the spacing of hoops or ties shall not exceed three inches within a distance of three feet from either end of the pile.

71-14. Composite piles of wood and concrete shall meet the following requirements: The wood portion shall meet all the requirements of the building provisions of this code for wood piles. The diameter of the concrete portion shall be not less than the top diameter of the wood pile. The concrete pile and the splices between the wood section and the concrete section shall be designed and constructed so that the concrete section and the joint will be at least forty per cent as strong in cross bending as a wood pile of twelve inches diameter. A lock shall be provided capable of resisting a direct tensile force of fifteen tons between the wood and the concrete sections, so that the upper section shall not lift and the two sections shall be maintained in alignment. The metal shell shall be left in place and shall be of sufficient strength to resist distortion and collapse.

71-15. The maximum unit stress on any concrete or composite pile at a section taken six feet below the surface of the ground in immediate contact with the pile, shall not exceed one-fifth of the ultimate strength of the concrete.

71-16. The allowable design load on a wood, concrete, or composite pile laterally supported for its entire length shall be determined by the driving formulae given in sections 71-17 and 71-18, or by load test, but shall not exceed fifty thousand pounds on any wood or composite pile nor a value based on the maximum unit stress or a load of sixty thousand pounds on any concrete pile.

71-17.

For drop hammer, $$P = \frac{2\ W\ h}{S + 1.0\ \text{inch}}$$

For single-acting hammer, $$P = \frac{2\ Wh}{S + 0.1\ \text{inch}}$$

For double acting steam hammer, $$P = \frac{2h\ (Am + W)}{S + 0.1\ \text{inch}}$$

in which formulae the notation is as follows:

P = allowable design load in pounds.
S = average set in inches for last six inches of driving.
h = fall or stroke in feet.
W = weight of hammer, or moving part in pounds.
A = area of piston in square inches.
m = mean effective steam pressure in pounds per square inch and assumed at eighty-five.

A follower shall not be used in determining allowable loads. Where followers are used in driving, load tests shall be made in accordance with section 71-19, or a longer pile driven to the same depth without a follower, shall determine the load. Such longer pile shall be driven at least every thirty feet in each direction. In determining allowable load from driving formula, the length of the pile in contact with the earth above the final cut-off elevation shall not exceed five feet.

71-18.

For single-acting or double-acting steam hammer, $$P = \frac{2\ E}{S\left\{1 + \frac{0.3\ w}{W}\right\}}$$

in which formula the notation is as follows:

P = allowable design load in pounds.
E = energy in foot-pounds = Wh for a single-acting hammer.
= h (Am + W) for a double-acting hammer.
h = stroke in feet.
A = area of piston in square inches.
m = mean effective steam pressure in pounds per square inch and assumed at eighty-five.
S = average set in inches for last six inches of driving, for a pile driven without a follower or for a pile driven with an all-steel follower, so designed that the strength in cross-bending of the joint between the follower and the pile shall be not less than the strength of the pile itself.
w = weight of pile, or weight of pile and follower, or weight of steel core for piles moulded in place in pounds.
W = weight of moving part in pounds.

In no case shall any precast pile be driven with the value for E less than three thousand five hundred foot-pounds, per blow, for each cubic yard of concrete in the precast pile and in no case shall E be less than six thousand foot-pounds.

71-19. When a load greater than that permitted by the driving formula is desired and wherever a load test is required by the building provisions of this code, the allowable design load on the pile shall be determined as follows:

(a) A test shall be made at least every seventy feet in each direction, but not less than two tests shall be made in any case.

(b) The pile to be tested shall be loaded with at least twice the proposed allowable design load.

(c) The settlement shall be measured daily until a period of twenty-four hours shows no additional settlement.

(d) One-half of the test load shall be the allowable design load; if the test shows no settlement for twenty-four hours and the total settlement has not exceeded one one-hundredth inch multiplied by the test load in tons; otherwise the test shall be considered to have failed and new tests shall be made to determine the allowable load on the pile.

Tests on piles moulded in place shall not be started until ten days or more after the piles are cast unless a high early strength cement, which meets the approval of the department of buildings, has been used, in which case the department of buildings will determine the length of setting time before test. Wood piles and precast concrete piles that have been cast and set before driving may be tested as soon as practicable after driving.

71-20. The allowable load on any pile extending through a layer of quicksand, or other unstable soil, and which is not supported laterally throughout its length, shall not exceed the value determined as for a fully supported pile, nor a value determined in accordance with the provisions for strength of columns, using the unsupported height of the pile as the length in the formula prescribed in the building provisions of this code.

71-21. The spacing of piles in any direction shall be not less on centers than two times the diameter at the cut-off, nor less than two feet, six inches.

71-22. There shall be not less than three piles in a group under a single column.

71-23. Piles for wall foundations must be driven either in two or more continuous lines, not less than one foot three inches apart on pile centers, or in groups of not less than two piles to a group with spacing as required in section 71-21. Piles driven in line shall be spaced not more than ten feet on centers in each line.

71-24. All wood piles shall be cut off to a level not less than one foot below city datum; provided, however, that when it appears that the ground water is different from city datum, it shall be permissible to cut off piles one foot below the ground water level, as determined by any architect or engineer responsible for the design of the building, subject to the approval of the commissioner of buildings. Pile groups shall be covered with concrete capping, which shall extend six inches below the top of the pile, and then shall project at least six inches beyond the outer face of the outside piles. All wood pile heads shall be cut off below broomed sections.

71-25. Concrete piles moulded in place shall be so made and placed as to insure the exclusion of foreign matter and secure a perfect, full sized shape. The shell used in forming the shaft shall remain in place and shall be of adequate strength to resist collapse under the conditions of its use.

71-26. All precast concrete piles shall be protected against damage in driving by the use of a cap of approved design and when driven to rock or hardpan shall be provided with a metal shoe having ample bearing surface. If a cushion is used in driving, the average set for the last six inches of driving shall be determined without the use of the cushion.

Metal Pipe Piles

71-27. Metal pipe piles may be of either the closed end, or the open end type, driven or jacked into place and shall be filled with concrete.

71-28. The metal pipe shall have a wall thickness of not less than five-sixteenths inch and an outside diameter of not less than ten inches. The outer one-eighth inch of metal shall not be considered in the design.

71-29. The ultimate strength of the concrete, by test at twenty-eight days, or at the age at which the concrete is to be subject to load, if less than twenty-eight days, shall show a minimum value of two thousand pounds per square inch, and shall contain not less than six bags of cement per cubic yard of concrete.

71-30. For metal pipe piles the allowable load per pile shall not exceed that computed in accordance with the building provisions of this code for reinforced concrete columns, and shall not exceed the values determined by test, conducted as follows:

(a) Two tests shall be made on each job of two hundred piles, or less, and one additional test for each additional one hundred piles, or fraction thereof, in the foundation.

(b) The test load on a driven steel pipe pile shall be maintained until there is no settlement for a period of twenty-four hours. One-half of the test load shall be allowed for the carrying load, if the test shows no settlement for twenty-four hours and the total settlement does not exceed one one-hundredth inch, multiplied by the test load in tons.

(c) The test load on a jacked-down steel pipe shall be measured by a pressure gauge on the jack and shall be maintained until there is no settlement for a period of twenty-four hours. One-half of the test load shall be allowed for the carrying load, if the test shows no settlement for twenty-four hours and the total settlement has not exceeded one one-hundredth inch multiplied by the test load in tons.

71-31. The length of a steel pipe pile shall not exceed sixty times the outside diameter of the pipe.

71-32. The allowable design load on any steel pipe pile extending through a layer of quicksand, or other unstable soil and which is not supported laterally throughout its length, shall not exceed the value determined as for a fully supported pile according to section 71-30, nor a value determined in accordance with the requirements of this code for reinforced concrete columns, using the unsupported height of the pile as the length of the column.

71-33. The design load on the cap shall be transferred to the pipe pile by one of the following methods:

(a) By bond on the exterior surface of the pipe enclosed within the cap, at a bond unit stress not exceeding four one-hundredths of the ultimate compressive strength of the concrete.

(b) By compression on the concrete and bond on the reinforcing bars embedded in the pile and in the cap, computed in accordance with the provisions of chapter 74 of this code.

(c) By a bearing plate bearing on the milled end of the pipe and grouted solidly to the concrete filling of the pile.

(d) By a combination of (a) and (b) above.

71-34. Splices may be used for pipe piles; provided, however, that the splices used between sections of the pipe are adequate to insure alignment and to resist both the direct stress and the bending stress due to loading.

71-35. All pipe piles shall be driven so that a vertical line from the center of the top shall not come closer to the outside shell at any point than one-third the diameter of the shell.

71-36. The spacing of pipe piles of the closed end type on centers in any direction shall be not less than two and one-half times the diameter of the pile, nor less than two feet six inches.

71-37. After the steel pipe shell is driven, all water and foreign matter shall be removed from the shell and the space within the shell shall be kept free from water and foreign matter.

Foundation Piers or Caissons

71-38. Materials for concrete provisions for mixing and placing, except as hereinafter provided, and stresses permitted in design, shall be as given in chapter 74 of this code; provided, however, that the minimum compressive unit strength shall be not less than three thousand pounds per square inch.

71-39. The load used in determining the areas of the pier and of the belled bottom shall be the load supported at the top of the pier determined in accordance with the provisions of chapter 70 of this code.

71-40. Piers on hardpan may be belled out; provided, however, that the inclination of bell is not less than sixty degrees with the horizontal and that there is a non-belled base with a minimum depth of nine inches.

71-41. In unstable ground the load determining the area of the pier at its base shall include the weight of the pier.

71-42. Digging shall be done in a manner which will leave the finished pier so that the center shall be in a vertical line from top to bottom.

71-43. Excavations for piers shall be lagged and braced with rings or otherwise. Lagging and rings shall be of sufficient strength to prevent collapse or distortion and tight enough to prevent loss of ground through the lagging. Lagging and rings shall be left in place.

71-44. Where piers are to be supported on hardpan, sample drillings shall be made to a depth of six feet below the bottom of each excavation. Samples of the hardpan must be submitted to the commissioner of buildings for approval as to soil classification.

71-45. Where piers extend to bedrock, the rock bottom of ten per cent of the total number of piers evenly distributed over the site shall be drilled to a depth of eight feet and if fissures are encountered, all rock shall be removed from all piers on the site to the fissure and new borings shall be made until eight feet of solid rock is found.

71-46. In filling with concrete, top dumping will not be permitted unless the excavation has been dewatered, and is kept dewatered. Whenever filling is discontinued for more than one hour all laitance shall be removed and a firm surface of concrete exposed. If the excavation cannot be kept dewatered it shall be filled with concrete by means of a water-tight tremie, or by a bottom dump bucket when the length of the tremie would exceed twenty feet, or by means of half-filled bags of concrete. All concrete deposited by any of these three latter described methods shall contain not less than six bags of cement per cubic yard of concrete.

71-47. Piers shall be protected against the seepage of surface water and storm water with coffer dams, the installation of which must precede the excavation for the piers and must reach blue clay or other imprevious soil.

Foundation Columns

71-48. Qualities of materials and stresses permitted in design shall be as given in chapters 74 and 75 of this code. The metal pipe shell shall have a wall thickness of not less than five-sixteenths of an inch. The outer one-eighth inch of metal shall be neglected in the design computations.

71-49. Foundation columns shall extend to solid rock. The rock bottom of ten per cent of the foundation columns, evenly distributed over the site, shall be drilled to a depth of eight feet below the base of the columns and if fissures are encountered all rock shall be removed to the fissure and new borings shall be made until eight feet of solid rock is found. If a structural steel core is used it shall extend to the bottom of the rock excavation and shall be provided with a steel base plate grouted onto the rock.

71-50. The bearing load on solid rock shall not exceed one hundred tons per square foot or the value determined by test as provided in section 71-8, if the base is placed less than one foot below the surface of the solid rock. If the base is placed one foot or more below the surface of the solid rock, the bearing load shall be based on the following formula:

$$\frac{R}{a} = \frac{P}{a} \quad \frac{(3 + d)}{2}$$

$d =$ depth in feet of the base below the surface of solid rock as defined in section 71-49.

$\frac{P}{a} =$ bearing pressure according to this section.

$\frac{R}{a} =$ allowable bearing pressure.

No increase shall be permitted for values of d, less than one foot or greater than three feet.

71-51. In foundation columns the full permissible load, as computed in accordance with section 71-48 and chapter 74 of this code, shall be used except that when the columns extend through a layer of quicksand, or other unstable soil of a depth equal to, or greater than, seven times the least lateral dimension of the column section, the permissible load shall be taken as that for a long column using, in the computation a length equal to the depth of the unstable layer of soil, plus four times the least lateral dimension of the column section.

71-52. The diameter of foundation columns, including the shell, shall be not less than two feet.

71-53. The metal enclosed within the steel pipe shell shall be not closer than three inches to the outside of the steel pipe shell.

71-54. Wherever base plates are used they shall be bedded onto the rock before placing the encasing concrete.

71-55. The steel pipe shell shall be so driven that a vertical line from the center of the top shall not come closer to the outside of the shell, at any point, than one-third the diameter of the shell.

71-56. After the steel pipe shell is driven, all water and foreign matter shall be removed from the shell and the space within the shell shall be kept free from water and foreign matter.

71-57. All space within the steel pipe shell shall be completely filled in one continuous operation with concrete having a slump of not more than six inches.

Steel Beams Used As Piling

71-58. Steel beams used for piling shall be not less in dimension than six inches by six inches. The minimum thickness of metal in steel beam piles shall be three-eighths of one inch. The moment of inertia about the gravity axis parallel with the web shall be not less than one-fourth of the moment of inertia about a gravity axis perpendicular to the web. The unit stress in piles shall not exceed fifteen thousand pounds per square inch. Piles in unstable ground not supported for the full length shall be figured as steel columns. Permissible bearing load shall be determined as given in section 71-17. Test loads shall be as given in section 71-19. The allowable load per pile shall not exceed sixty thousand pounds for piles not driven to rock.

Violation of Chapter Provisions

71-59. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 72

WOOD CONSTRUCTION

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72-1. All timber used for building purposes shall be manufactured in accordance with the standard specifications for grades of longleaf and shortleaf southern pine lumber and timber conforming to American Lumber Standards of the Southern Pine Association, effective September 1, 1932, and with the Standard Grading and Dressing Rules for Douglas Fir and West Coast Hemlock of the West Coast Lumbermen's Association, effective July 1, 1934. For other species the stresses therefor shall be established in accordance with the "Guide to the Grading of Structural Timbers and Determination of Working Stresses," Miscellaneous Publication No. 185 of the U. S. Department of Agriculture.

72-2. Dense timber shall show, at least on one end of the piece, not less than six annual rings per inch, and at least one-third summer wood.

72-3. The strength of wooden members shall be determined from actual dimensions of the pieces, and not from nominal dimensions.

72-4. The maximum allowable stresses in pounds per square inch on actual sections for timber in flexure shall be as provided in the following table:

Maximum Allowable Stresses on Timber in Flexure

Species and grades	Extreme fiber stress and tension with grain	Compression across grain	Sheer with grain	Modulus of elasticity
	lb. per sq. in.	lb. per sq. in.	lb. per sq. in.	lb. per sq. in.
Prime structural long leaf yellow pine	1800	375	125	1,600,000
Selected douglas fir having knots limited to one-half the size permitted in select structural douglas fir and slope of grain limited to 1 to 18....	1800	345	100	1,600,000
Merchantable structural long leaf yellow pine	1600	375	125	1,600,000
Dense structural square edge and sound southern yellow pine............	1600	375	125	1,600,000
Select structural douglas fir..................	1600	345	100	1,600,000
No. 1 structural long leaf yellow pine..	1400	250	100	1,600,000
No. 1 dimension southern yellow pine..	1000	250	100	1,200,000
No. 1 dimension douglas fir..................	1000	250	100	1,200,000
Oak (white or red)..............................	1000	500	125	1,500,000
Western hemlock	1000	250	80	1,000,000
Norway pine	800	250	80	1,000,000
White pine	800	200	80	1,000,000
Eastern hemlock	700	200	60	800,000

72-5. Working stresses in compression parallel to grain for column shall not exceed those given in the following table for the respective species and ratios of unsupported length to least dimension. The ratio of unsupported length of column to least dimension shall not exceed fifty.

Maximum Allowable Compressive Stresses on Timber Columns

Species and grades	Ratio of length to least dimension $\left(\frac{L}{D}\right)$ 10 lb. per sq. in.	12 lb. per sq. in.	14 lb. per sq. in.	16 lb. per sq. in.	18 lb. per sq. in.	20 lb. per sq. in.	22 lb. per sq. in.	24 lb. per sq. in.
Prime structural long leaf yellow pine	1300	1265	1235	1189	1123	1029	904	762
Selected douglas fir having knots limited to one-half the size permitted in select structural douglas fir and slope of grain limited to 1 to 18	1300	1265	1235	1189	1123	1029	904	762
Merchantable structural long leaf yellow pine	1200	1172	1149	1113	1060	987	889	762
Dense structural square edge and sound southern yellow pine	1200	1172	1149	1113	1060	987	889	762
Select structural douglas fir	1200	1172	1149	1113	1060	987	889	762
No. 1 structural long leaf yellow pine	1000	984	970	950	919	877	820	745
No. 1 dimension southern yellow pine	900	879	862	835	795	740	666	571
No. 1 dimension douglas fir	900	879	862	835	795	740	666	571
Oak (white or red)	900	887	875	858	833	798	750	688
Western hemlock	800	779	761	734	694	638	563	476
Norway pine	700	686	674	656	629	592	542	476
White pine	700	686	674	656	629	592	542	476

Ratios intermediate in table. For columns with ratio of length to least dimension intermediate between those which are given in the above table, the safe loads in pounds per square inch shall be determined by interpolation.

Ratios greater than given in table. For columns with ratio of length to least dimension greater than is given in the above table, but in no case exceeding fifty, the safe load shall be determined by the following formula:

$$\frac{P}{A} = \frac{0.274E}{\left(\frac{L}{D}\right)^2}$$

in which

P = Total load in pounds.
A = Cross sectional area in square inches.
E = Modulus of elasticity in pounds per square inch (table in section 72-4).
L = Unsupported length in inches.
D = Least dimension in inches.

72-6. Wherever a structural grade of southern yellow pine or of douglas fir is used, with working stresses of fourteen hundred pounds or more per square inch, as given in the table in section 72-4 or of one thousand pounds or more per square inch as given in the table in section 72-5, the commissioner of buildings shall be furnished with a certificate from the designing architect or engineer of the building or structure that he has superintended its construction to the extent of being able to state without reservation that the timber specified has been used and is in place. The foregoing cerificate shall be filed with the data submitted when application is made for the approval of floor load placards, and if floors are not required to be placarded such certificate shall be filed permanently in the file where the record of floor load placards is kept. The commissioner of buildings may establish such rules to enforce the provisions of this section, not inconsistent herewith, as will prevent substitution of an inferior grade of timber for that grade which it is represented will be used at the time plans are presented and approved.

72-7. Girders and beams where entering or resting on masonry or concrete walls, shall have a bearing of at least three and three-fourths inches.

72-8. A wood member entering a party or division masonry or concrete wall shall be separated from the opposite side of the wall, and from any beam entering the opposite side of the wall by at least six inches of masonry or concrete. The ends of the joists shall be splayed or fire-cut, to a bevel of not less than three inches in their depth.

72-9. Span of timber shall be taken as the distance between supports, plus one-half of the required bearing at each end.

72-10. In computing horizontal shear the load at each end of the span may be neglected for a distance from the end of the required span equal to the depth of the beam.

72-11. Joists having a height of more than three times their width shall be provided with cross-bridging of wood or metal if the joists span is more than eight feet. The distance between successive bridgings, or between a bridging and a bearing shall not exceed eight feet. The ratio of height to width shall not exceed eight and one-half to one, (actual sizes). Where the ratio of height to width exceeds seven and one-half to one, the distance between successive bridgings shall not exceed six feet.

72-12. Bottoms of wood columns and posts shall be at least two inches above finished concrete floor line, and shall be provided with base plates or other water stops.

72-13. Wood construction shall not be inclosed without sufficient ventilation provisions to prevent rot. There shall be not less than one inch of air space at the sides of truss members and girders entering masonry.

72-14. Tension members of all wood trusses shall be of lumber dried to fifteen per cent or less in moisture content and shall be of a structural grade of southern yellow pine or douglas fir. Splices shall develop full load at point of splice. All wood trusses in manufacturing units and garages shall be designed to support a concentrated load of not less than two thousand pounds suspended from any point on the lower chord. All trusses shall be provided with lateral bracing of the top chords to prevent distortion.

72-15. Allowable working loads per bolt for southern yellow pine and douglas fir in double shear with steel or wood splice plates are given in the following table. Allowable loads given are for dry timber, and are for use only where continuously dry conditions will obtain. Allowable loads per bolt for timber with a moisture content of more than eighteen per cent when placed, or where there will be wet or alternately wet and dry conditions, are to be reduced by one-third. One-half of values given in the following table may be used for connections in which bolts act in single shear. Twice the values given in the following table may be used for connections in which bolts act in quadruple shear. Recommendations of U. S. Department of Agriculture Technical Bulletin No. 332 are to be followed for allowable loads per bolt for other species of timber, for other conditions of use, for bolts acting at an angle to the grain, and for allowable bolt spacing, edge margins, and other details of construction not covered or modified herein.

Maximum Allowable Loads in Bearing Per Bolt in Double Shear in Bolted Timber Splices and Connections

For dry southern yellow pine or douglas fir used in continuously dry locations.

Thickness of main member	Parallel to grain bolt size ½″	⅝″	¾″	⅞″	1″	1⅛″	1¼″
1⅝″	1000	1300	1600	1900	2100	2400	2600
2⅝″	1300	1900	2500	2900	3400	3800	4300
3⅝″	1300	2100	2900	3700	4500	5200	5800
5½″	1300	2100	3000	4000	5200	6500	7900
7½″	1300	2100	3000	4000	5200	6600	8200
9½″	1300	2100	3000	4000	5200	6600	8200
11½″	1300	2100	3000	4000	5200	6600	8200

Thickness of main member	Perpendicular to grain bolt size ½″	⅝″	¾″	⅞″	1″	1⅛″	1¼″
1⅝″	400	400	500	500	600	600	700
2⅝″	600	700	800	800	900	1000	1100
3⅝″	800	900	1000	1200	1300	1400	1500
5½″	800	1100	1500	1800	1900	2100	2200
7½″	800	1100	1500	1900	2400	2800	3100
9½″	800	1100	1500	1900	2400	3000	3600
11½″	800	1100	1500	1900	2400	3000	3600

72-16. Wood trusses shall be securely anchored to the wall and shall be provided with metal bearing plates.

72-17. *Design load.* Wooden flag poles shall be designed in accordance with section 70-18 of this code.

Diameter and quality. Wooden flag poles shall have a diameter at the base of not less than one-fiftieth of their unsupported length and a diameter at top of not less than five-twelfths of the diameter at the base. They shall be straight grained and free from loose knots.

72-18. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 73

MASONRY CONSTRUCTION

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73-1. For the purpose of the building provisions of this code the terms herein defined shall be construed to mean and are required to mean as follows:

Masonry. Units of stone, brick, concrete, terra cotta, medium or hard burned hollow clay tile not less than three and three-fourths inches in thickness on the bed, laid in mortar with all joints filled and so bonded together as to exert common action under load, or monolithic concrete, or a combination of these materials.

Solid wall. A wall built of stone, brick, terra cotta, concrete, other solid units, or a combination of these materials, laid in mortar with all joints filled and so bonded together as to exert common action under load; or a wall of monolithic concrete.

Hollow wall. A wall built of solid units, laid in mortar with all joints filled, and bonded together in such a manner as to exert common action under load, and so constructed as to provide one or more vertical air spaces within the wall; or a wall of monolithic concrete so constructed as to provide similar air spaces.

Wall of hollow units. A wall consisting wholly or in part of hollow units of structural clay tile, terra cotta, concrete block, or a combination of these materials, laid in mortar with all joints filled, and bonded in such a manner as to exert common action under load.

Bearing wall. A wall which supports any load in addition to its own weight, or a wall which is more than one story in height above its support.

Non-bearing wall. A wall, other than a partition, which is supported at each structural floor and roof system.

Faced wall. A wall in which the masonry facing and backing are so bonded as to exert common action under load.

Veneered wall. A wall having a facing of non-combustible material which is not attached and bonded so as to form an integral part of the wall for the purposes of load bearing and stability.

Party wall. A wall used or adapted for joint service between two buildings.

Quality of Materials

73-2. All brick of clay, shale, concrete, or sand-lime shall have a minimum compressive strength of eighteen hundred pounds per square inch of gross area when tested flat, and a minimum modulus of rupture of four hundred pounds per square inch and shall otherwise conform to the standard specifications of the American Society for Testing Materials for building brick made from clay or shale (Serial Designation C62-30), for concrete brick (Serial Designation C55-34) or for sand-lime brick (Serial Designation C73-30).

73-3. Brick having two longitudinal corings, each not more than three-fourths inch square or having not over twenty-five per cent of their sectional area removed by vertical corings, where such corings are at least one-half inch from the face of the brick, at least one-half inch apart, may be used as permitted by the building provisions of this code for solid brick; provided, however, that such brick conforms to all the other requirements in the building provisions of this code for solid brick.

73-4. *Standard sizes.* Structural clay tile for bearing walls or for walls wholly or in part exposed to the weather shall at least comply with the standard specifications of the A. S. T. M. (Serial Designation C34-36). The standard weight of load bearing structural tile per square foot of wall surface as laid up shall be taken as twenty pounds for four inch thickness, thirty pounds for six inch thickness, thirty-six pounds for eight inch thickness, forty-two pounds for ten inch thickness and fifty-two pounds for twelve inch thickness. A maximum variation of two pounds under this standard weight may be allowed. The minimum thickness of a single shell or the minimum aggregate thickness of a double shell shall be one inch for tile laid in wall with cells vertical and seven-eighths inch for tile laid in wall with cells horizontal. With double shell tiles the maximum width of void between shells shall be five-eighths inch. The minimum thickness of webs shall be five-eighths inch.

Special sizes. Structural clay tile of sizes 4x5x12 and 8x5x12 when used in exterior walls shall conform to the standard specification for structural clay load-bearing wall tile, grade LBX, of the American Society for Testing Materials, (Serial Designation C34-36), and when used in interior walls or in exterior walls where protected with a facing of three and three-quarters inches or more of stone, brick, terra cotta, or other masonry shall conform to the standard specifications for structural clay load-bearing wall tile, grade LB, of the American Society for Testing Materials (Serial Designation C34-36). A 4x5x12 size shall weigh nine pounds per unit and 8x5x12 size shall weigh sixteen pounds per unit.

73-5. All structural clay tile used for partitions or non-load bearing interior walls shall be at least equal to the specifications for structural clay non-load bearing tile of the American Society for Testing Materials (Serial Designation C56-36).

73-6. Concrete units may be either solid or hollow and shall be made of concrete materials meeting the requirements of chapter 74 of this code, except that burned clay or shale, blast furnace slag, cinders, or other approved aggregate may be used as an aggregate. When cinders are used as an aggregate, the combustible content shall not exceed twenty per cent by weight of the dry mixed cinders nor shall any unit contain in excess of one and one-fourth per cent by weight of sulphur.

73-7. Concrete units having voids of not more than twenty-five per cent of core area shall be considered as solid units and shall have a minimum crushing strength of eighteen hundred pounds per square inch of gross area at an age of twenty-eight days or when delivered on the job.

73-8. Hollow concrete units used in bearing walls or in exterior walls shall be at least equal to the requirements of the specifications and tests for load bearing concrete masonry units of the American Society for Testing Materials (Serial Designation C90-36).

73-9. All concrete units shall bear a distinctive mark of the manufacturer or shall otherwise be readily identified as to origin. Manufacturer's markings shall be registered with the department of buildings.

73-10. All units of architectural terra cotta shall have a minimum ultimate compressive strength of fifteen hundred pounds per square inch of net area and seven hundred pounds per square inch of gross area and a maximum absorption after forty hours' immersion in cold water, of ten per cent of the weight of the dry unit.

73-11. All units of stone, when counted as a part of the required wall thickness, shall have a minimum compressive strength of five thousand pounds per square inch and when showing natural cleavage planes or seams shall be laid on their natural beds.

73-12. All units of architectural cast stone shall be at least equal to the requirements of the federal specifications (SS-S721) for architectural cast stone adopted November 10, 1931.

73-13. Glass block construction consisting of glass block units not less than three and three-fourths inches thick, laid in approved masonry mortar and properly bonded or adequately reinforced with metal, may be inserted wherever window openings are permitted, if properly constructed as a substitute for glazed sash and window frames. Glass block construction shall have no performance in carrying weight or transmitting strains induced by the loads of the building or its contents. Glass block construction, in the form of panels, may be continuous in any one story but shall be supported laterally by masonry piers, steel, or other pier or column construction complying with the requirements for the building at intervals not exceeding twenty-five feet and no panel shall exceed one hundred fifty square feet in area. Panels shall be protected from contraction and expansion of the structure by proper expansion joints.

73-14. Portland cement shall be at least equal to the requirements of the standard specifications for Portland cement (Serial Designation C9-37) or the specifications for high early strength Portland cement (Serial Designation C74-36) of the American Society for Testing Materials.

73-15. Masonry cement shall be at least equal to the requirements of the specifications and tests for masonry cement of the American Society for Testing Materials (Serial Designation C91-32T).

73-16. Lime shall be at least equal to the requirements of the standard specifications for hydrated lime for structural purposes (Serial Designation C6-31) or standard specifications for quicklime for structural purposes (Serial Designation C5-26) of the American Society for Testing Materials. Quicklime shall be slaked for at least forty-eight hours before using, unless report of approved testing laboratory is submitted to the commissioner of buildings showing that complete hydration is accomplished in a shorter period of time.

73-17. Sand shall be hard, clean, and free from foreign materials which will reduce the strength of the mortar. Sand for mortar shall have a minimum fineness modulus of two.

73-18. Plain concrete used to form any part of a wall, pier, buttress, or other structural member shall be made and placed in accordance with the provisions of chapter 74 of this code.

Allowable Unit Stresses

73-19. The thickness of masonry walls shall be sufficient at all points to keep the combined stresses due to live, dead, and wind loads for which the building is designed, within the limits specified in the following sections of this chapter dealing therewith. The area of all recesses, chases and other reductions of horizontal area shall be deducted from the effective area in making stress computations. In every case where the center of gravity of the loads does not coincide with the center line of the wall or the center of the pier or buttress, the stresses due to eccentric loading shall be included in the computations.

73-20. The maximum compressive stresses in masonry shall not exceed the values given in the following table:

Maximum Allowable Compressive Stresses on Load-Bearing Masonry

Mortar mixes	Mortar number					
By volume—	1	2	3	4	5	6
Portland cement	5	1	1	1		
Lime	1	1		2	1	
Masonry cement			10			1
Sand	15	6	30	9	3	3
	Allowable masonry stress (Lbs. per sq. in.)					
Material						
Coursed limestone rubble	200	200	150	150	100	100
Ashlar granite	400	200	150	150	100	100
Ashlar limestone, cast stone, brick testing 5000 pounds per square inch	350	200	150	150	100	100
Brick or other solid units testing 3500 pounds per square inch	250	200	150	150	100	100
Brick or other solid units testing 1800 pounds per square inch	200	200	150	150	100	100
Hollow units	80	80	60	Not allowed		

73-21. The tension on the extreme fibre in bending shall not exceed one-tenth the maximum allowable compression stress as given in the table in section 73-20 nor twenty pounds per square inch.

73-22. In walls composed of more than one type of masonry the maximum unit stress shall not exceed the allowable unit stress for the weaker material.

73-23. The maximum compressive stress for plain concrete shall not exceed two-tenths of the ultimate compressive strength of the concrete at twenty-eight days.

73-24. The tension on the extreme fiber in bending shall not exceed two per cent of the ultimate compressive strength of the concrete at twenty-eight days.

Minimum Wall Thickness

73-25. Masonry walls shall be supported at right angles to the face of the wall at intervals not exceeding eighteen times the wall thickness. Such lateral support may be obtained by cross walls, piers, buttresses, or columns when the limiting distance is measured horizontally or by floors when the limiting distance is measured vertically. Sufficient bonding or anchorage shall be provided between the wall and the supports to resist the assumed wind force acting in an outward direction. The length shall be considered as the clear distance betwen cross walls, piers, buttresses, or columns. The height shall be considered as the clear distance between structural floor or roof systems.

73-26. When walls are dependent upon floors for their lateral support, provision shall be made in the building to transfer the lateral forces resisted by the floors to the ground.

73-27. Piers, pilasters or buttresses shall be designed to resist all lateral forces acting thereon.

73-28. The minimum thickness of masonry bearing walls, except as modified in the other sections of this chapter dealing with minimum wall thicknesses, shall be as given in the following table:

Minimum Thickness of Bearing Walls in Inches

	Single and multiple dwellings							
Height	Basement	1st story	2nd story	3rd story	4th story	5th story	6th story	7th story
1 story	8	8						
2 story	12	8*	8					
3 story	12	12	12	8				
4 story	16	12	12	12	8			
	Other occupancies							
1 story	12	8						
2 story	12	12	8					
3 story	16	12	12	8				
4 story	16	16	12	12	12			
5 story	16	16	16	12	12	12		
6 story	20	16	16	16	12	12	12	
7 story	20	20	16	16	16	12	12	12

* Solid units only.

[Amend. Coun. J. 12-21-39, p. 1396.]

73-29. Bearing walls of hollow units or hollow walls of solid units shall not exceed fifty feet in height above the top of the foundation wall.

73-30. Where solid monolithic plain concrete basement walls extend up to the bottom of the structural system of the first floor, such basement walls may be of the same thickness as the first story walls.

73-31. For single and multiple dwellings, two stories or less in height, the walls below grade may be of solid masonry not less than eight inches thick.

The minimum thickness of walls below grade for buildings of wood frame construction shall be as required by the first paragraph of this section for walls below grade for single and multiple dwellings.

73-32. The minimum thickness of non-bearing walls shall be four inches less than specified in the table in section 73-28 but not less than eight inches. Exterior non-bearing walls in skeleton construction shall be not less than eight inches thick and shall, in each story, have a bearing of not less than seven and one-half inches upon a structural member which shall be fireproofed as required for members of the structural frame.

73-33. All party walls shall be of solid masonry not less than twelve inches thick.

73-34. Parapet walls shall be solid walls not less in thickness than required for the walls immediately below and shall be laid in No. 1 mortar as specified in the table in section 73-20. Except where common brick is used, throughout, as facing parapet walls shall be constructed for their entire thickness and height, with building brick units, grade A, A.S.T.M. (Serial Designation C62-30), for ultimate compressive strength and with a maximum absorption of not more than eight per cent.

73-35. All parapet walls shall be capped with an impervious coping material so laid as to prevent water penetration.

73-36. Parapet walls may be faced in accordance with section 73-45.

73-37. All basement and retaining walls of masonry shall be of sufficient strength to resist the lateral pressure transmitted to them without exceeding the stresses allowed by the provisions of this chapter dealing with allowable unit stresses.

73-38. An existing masonry wall may be used in the renewal or extension of a building if it is structurally sound or can be made so by reasonable repairs.

Where it is not of sufficient thickness to meet the requirements of the building provisions of this code, it shall be reinforced by a lining or facing of masonry or by pilasters, buttresses, or columns.

73-39. Where existing walls are to be lined or faced, the lining or facing shall be not less than eight inches thick and the total thickness shall be not less than four inches greater than required by the building provisions of this code for new walls. All linings and facings shall be thoroughly bonded to existing walls by toothings of not less than fifteen per cent of the surface area uniformly distributed over the entire area. All such linings and facings shall be laid in No. 1 mortar.

73-40. Where existing walls are reinforced by new pilasters, buttresses, or columns, the entire additional load shall be carried by the new construction. Pilasters or buttresses shall be thoroughly bonded into the old wall by building them into chases cut at least eight inches into the existing wall throughout its height. The new masonry shall be laid in No. 1 mortar as specified in the table in section 73-20 of this code.

73-41. Footings for the wall lining or facing, pilasters, or columns shall be combined with the existing footings so as to carry the total load in accordance with chapter 71 of this code.

73-42. Reinforced concrete walls shall be designed in accordance with chapter 74 of this code.

Details of Construction

73-43. In every brick wall, pier, pilaster, or buttress at least every sixth course shall be a full header course or there shall be at least one full length header in every seventy-two square inches of each surface of the wall.

73-44. Where two or more hollow units are used in the thickness of a wall the inner and outer courses shall be bonded at vertical intervals not exceeding three courses or sixteen inches by lapping not less than four inches.

73-45. Where walls are faced with brick, terra cotta, stone, architectural cast stone, concrete units, burned clay, or shale units, bonded as provided in this section, the facing may be considered as part of the required thickness. Brick facing shall be bonded with full headers equivalent in number and area to one course composed exclusively of headers to each five stretcher courses. For facings of terra cotta, stone, architectural cast stone, or similar units, at least twenty per cent of the surface area shall be composed of uniformly distributed bond units extending into the backing at least four inches. All units more than one-half square foot in face area, except bond units, shall be anchored into the backing with metal anchors at least three-sixteenths inch thick. Such anchors shall be of solid non-rusting metal or shall be asphalt coated after bending. There shall be no less than two anchors for each unit more than two feet in length or three square feet in face area. Units more than twelve square feet in area shall have at least one anchor in each four square feet of face area; provided, however, that a masonry wall consisting of a three and three-fourths inch thickness of open back terra cotta and eight inches or more of brick, shall be considered the equivalent of a brick wall of the same thickness as the combined thickness of brick and terra cotta; provided, that brick shall be bonded into all open spaces of terra cotta, and that each piece of terra cotta shall be additionally bonded to brickwork with two or more metal anchors as required by this section. The height of any facing unit shall not exceed eight times its thickness, and no unit shall be less than three and three-fourths inches thick. Isolated piers not more than twenty-four inches in width faced with stone, terra cotta, or similar units shall have bond units in every alternate course but the area of bond units need not exceed twenty per cent of the face area of the pier.

73-46. Veneers shall not be considered to be part of the required wall thickness. Veneers shall be subject to the requirements of the general provisions of this code pertaining to buildings.

73-47. Masonry veneers for buildings of wood frame construction shall be not less than three and three-fourths inches thick, shall be supported on solid masonry basement or foundation walls below grade, shall be securely tied to the studding and shall extend not more than thirty feet in height above grade.

73-48. The minimum bearing of joists on masonry walls shall be three and three-fourths inches. The section of any wall or pier shall not be reduced more than twenty per cent to provide bearing for wood joists or other wood floor construction. Properly designed metal wall boxes or stirrups shall not be considered as reducing wall or pier section. There shall be at least six inches of solid masonry separating the ends of wood joist carried on a fire division wall and between the ends of such joist and the opposite side of the wall.

73-49. No load bearing corbel shall project more than four inches from the face of the wall and no one course shall project more than three-fourths inch beyond the course immediately below it. Corbels shall be bonded to the wall using alternate courses of headers and stretchers with the top course of headers. There shall be at least three courses, the upper one of which shall be a header course, laid flush with the top projecting course of every corbel which supports any load.

73-50. All floor and roof systems shall be anchored to walls at intervals of not more than seven feet with metal anchors so placed as to provide a continuous tie across the building. Where such a tie is composed of more than one joist, girder, or truss, the abutting members shall be joined by tie or splice plates equal in strength to the anchors to form a tie across the building. Anchors for the ends of joists or girders shall be fastened below the center. Anchors in joists parallel to the wall shall be fastened to the top of the joists and shall engage sufficient joists to have a combined thickness of at least five and one-half inches. The anchors shall extend to within four inches of the opposite face of the wall. Every anchor and its fastenings shall be adequate to resist an outward pressure upon that portion of the wall anchored by it equal to the wind pressure specified in chapter 70 of this code. Anchors shall have a minimum cross-sectional area of four-tenths square inch and a minimum thickness of three-sixteenths inch.

73-51. The height of isolated masonry piers shall be not more than twelve times their least dimension. Wall sections twenty-four inches or less in width between openings shall be considered as isolated piers. All isolated load bearing piers shall be of solid masonry.

73-52. There shall be at least eight inches of masonry on three sides of any chase. Horizontal or diagonal chases more than twenty-four inches long shall be considered as openings entirely through the wall.

73-53. Openings in walls shall have well buttressed arches of masonry, or lintels of reinforced concrete or metal with bearings at each end of not less than four inches. In buildings of ordinary construction, wood lintels may be provided back of masonry arches.

73-54. Masonry arches shall be of solid masonry and shall have a minimum rise of one-twelfth of clear span. The units shall be laid on a radius of the arch curve. The minimum total depth of all the radially laid courses shall be one-twelfth the span. Provision shall be made in the wall for resisting the arch thrust.

73-55. Masonry in contact with the earth shall be laid in mortar No. 1 as given in the table in section 73-20. Hollow units of clay tile shall not be used for exterior walls below grade.

73-56. All masonry shall be protected against freezing for at least forty-eight hours after being laid. No frozen material shall be built upon.

Violation of Chapter Provisions

73-57. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 74

REINFORCED CONCRETE CONSTRUCTION

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General Provisions

74-1. With the specific exceptions enumerated in section 74-3, and except as otherwise provided in the building provisions of this code the design and construction of reinforced concrete shall be in accordance with the provisions of the "Building Regulations for Reinforced Concrete" (A. C. I. 501-36-T) adopted by the American Concrete Institute on February 25, 1936, and published in the proceedings of that Institute, volume 32.

74-2. Wherever in the said Building Regulations for Reinforced Concrete reference is made to standards or tentative standards of the American Society for Testing Materials, such standards or tentative standards are hereby made a part of the building provisions of this code and shall remain as of February 25, 1936, except as other or later designated standards are specified elsewhere in the building provisions of this code.

74-3. The following provisions, contained in the Building Regulations for Reinforced Concrete referred to in section 74-1, are hereby nullified within the jurisdiction of the city:

101. Scope
103. Special systems of reinforced concrete
205. Concrete aggregates
406. Cold weather requirements, par. (b)
603. Resistance to wind forces, par. (c)
705. Requirements for T-beams, par. (c)
902. Ordinary anchorage requirements, par. (b)
1103. Spirally reinforced columns,
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1105. Composite columns,
1106. Combination columns,
1107. Long columns,
1108. Bending moments in columns,
1109. Combined axial and bending stress,
1110. Permissible combined compressive and tensile stress,
1111. Wind stresses,
1112. Monolithic walls.

74-4. The following designated standards or tentative standards of the American Society for Testing Materials are hereby made a part of the building provisions of this code and shall take precedence over other designations in the cases of the materials hereinafter enumerated:

High early strength Portland cement: "Standard Specifications for High Early Strength Portland Cement," (Serial Designation C74-36).

74-5. The sand to be used for concrete shall be clean, hard, coarse sand of the grade known as torpedo sand and free from loam or dirt, and not less than forty-five per cent, shall be returned on a screen of four hundred mesh to the square inch.

74-6. The stone to be used in concrete shall be clean crushed hard stone or clean crushed blast furnace slag or gravel of a size to pass through a one-inch square mesh. If limestone or slag is used, it shall be screened to remove all dust; if gravel is used, it shall be thoroughly washed. Stone shall be drenched immediately before using. If slag is used, it shall be of such character that when made into concrete the concrete will develop a crushing strength equal to that specified for stone or gravel concrete.

74-7. The following unit stresses in reinforcing steel shall not be exceeded:
Tension: f_s or f_v
Cold drawn wire, f_s .... 25,000 lb. per sq. in.

74-8. All concrete materials and all reinforcement, forms, fillers, and ground with which the concrete is to come in contact shall be free from frost. Whenever the temperature of the surrounding air is below forty degrees Fahrenheit all concrete placed in the forms shall have a temperature of between seventy degrees Fahrenheit and one hundred degrees Fahrenheit, and shall be maintained at a temperature of not less than seventy degrees Fahrenheit for three days or fifty degrees Fahrenheit for five days for standard concrete and not less than seventy degrees Fahrenheit for two days or fifty degrees Fahrenheit for three days for high early strength concrete or for as much more time as is necessary to insure proper curing of the concrete.

74-9. Where the principal reinforcement in a slab which is considered as the flange of a T-beam (not a rib in ribbed floor) is parallel to the beam, transverse reinforcement shall be provided in the top of the slab. This reinforcement shall be designed to carry the load on the portion of the slab assumed as the flange of the T-beam. The spacing of the bars shall not exceed three times the thickness of the flange, or in any case, twelve inches.

Composite Beams

74-10. Where structural steel members are encased in concrete beams, and protected by not less than the minimum thickness of concrete specified elsewhere in this code for the fireproofing of structural steel, the resulting composite beam may be computed as a reinforced concrete beam in accordance with the assumptions stated in section 601 (a) of the Building Regulations for Reinforced Concrete referred to in section 74-1. The properties of sections of composite beams shall be computed on the basis of the transformed area of steel.

74-11. In composite beams in which reinforcing bars are used in conjunction with structural steel members the properties of the cross section of the beam shall be computed on the basis of transformed area of steel and in accordance with the assumptions stated in section 74-10.

74-12. All provisions of this chapter shall apply to composite beams. Standard beam connections shall be considered as affording slight restraint only, and the span of composite beams supported by such connections shall be taken as the overall length of the encased steel member measured out-to-out of the connection angles. Where end connections properly designed to take the end moment of a continuous beam or the moment at the joint of a rigid frame are provided, or where proper supplementary reinforcement in the form of bars or plates is supplied to take this moment at the support, the span and moments of composite beams may be taken as specified for continuous or restrained beams.

74-13. Built-up steel sections used in composite beams shall be designed in accordance with chapter 75 of this code for the forces to which they are subjected in the composite beam.

74-14. In all cases of composite beams, where forms are suspended from the steel beam, the steel beam shall be designed in accordance with chapter 75 of this code to carry all loads coming upon it during construction; while the entire composite beam shall be designed to carry all loads after construction.

Continuous Beams

74-15. In continuous beams every positive reinforcing bar shall extend twelve diameters beyond the point at which it is no longer needed to resist stress. In cases where the length from the point of maximum tensile stress in the bar to the end of the bar is not sufficient to develop this maximum stress by bond, the bar shall extend into a region of compression and be anchored by means of a standard hook or it shall be bent across the web and made continuous with the negative steel or anchored in a region of compression. At least one-quarter the area of positive reinforcement shall extend along the same face of the beam into the support at least four inches.

Reinforced Concrete Columns

74-16. The maximum permissible axial load (P) on columns reinforced with longitudinal bars, structural steel, or cast iron cores and closely spaced spirals enclosing a circular core shall be as follows:

$P = A_c\ (.225f'_c + f_r p + 2f_r p')$. The ratio, p, of the effective cross-sectional area of the vertical reinforcement to the core area, A_c, of the column, shall be not less than 0.01. The minimum numbers of bars shall be six and the smallest size shall be three-fourths inch round. The cross-sectional area of the longitudinal reinforcement, where the stresses at splices are transferred by the bond with the concrete, shall not exceed six per cent of the core area of the column. The center to center spacing of bars within the periphery of the column core shall be not less than two times the diameter for round bars, nor two and one-half times the side dimension for square bars. The clear spacing between bars shall be not less than one inch, nor one and one-third times the maximum size of the coarse aggregate. These spacing rules apply to the bars at a lapped splice. The clear opening between two adjacent rings or rows of bars, or between a ring or row of bars and any metal core or structural shape, or between any two types of longitudinal reinforcement, or between metal core or structural shape and spiral shall be not less than three inches. No longitudinal bars shall be required in columns reinforced by a structural steel or cast iron core. The spiral ratio, p′, shall be not less than the value given by the formula

$$p' = \frac{0.125f'_c\,(R-1)}{f_r}$$

nor shall it be less in any case than one-half of one per cent, nor shall the value used in the formula for allowable axial load exceed 2/3p, nor two per cent.

R is the ratio between the gross area and the core area. For square or rectangular columns the gross area shall be considered as the area of the circle having a diameter three inches larger than the diameter of the core. The spiral reinforcement shall consist of evenly spaced continuous spirals held firmly in place and true to line by at least three vertical spacer bars. All splices in lateral reinforcement at points where the column is not laterally supported shall be made by welding in accordance with the provisions of chapter 75 of this code. Column spirals may be omitted within that part of the column which lies within the floor slab provided that the length of column over which the spiral is omitted shall not exceed one-third of the least lateral dimension of the column section. The center to center spacing of the spirals shall not exceed three inches, nor one-sixth of the core diameter, nor shall it be less than three and one-half times the diameter of the spiral rod. In no case shall the clear distance between spirals be less than one and one-third times the maximum size of aggregate nor less than one inch. All openings within the section and all recesses in the exterior of metal cores or structural shapes shall be so designed as to be readily and completely filled with concrete when the column is concreted. Cores and shapes shall be disposed symmetrically within the column section in the case of axially loaded columns. When the eccentricity of loading is fixed in direction, cores and shapes shall be arranged accordingly.

74-17. The maximum permissible axial load (P) on columns reinforced with longitudinal bars and separate lateral ties shall be as follows:

$$P = A_g (0.2f'_c + 0.9f_r p_g)$$

The ratio, p_g, of the effective cross-sectional area of the vertical reinforcement to the gross area, A_g of the column, shall be not less than 0.01 nor more than 0.04. The reinforcement shall consist of not less than four bars, not less than three-fourths inch in diameter, placed with a clear distance from the face of the column of not less than one and one-half inches. All longitudinal reinforcement shall be tied in two directions by lateral reinforcement at least one-quarter inch in diameter at not more than twelve inch centers.

74-18. Structural steel columns of any rolled or built-up section wrapped with the equivalent of No. 8 W. & M. standard gauge wire spaced four inches on centers and encased in concrete not less than two and one-half inches thick over all of the metal, except rivet heads and connections, will be permitted to carry a load equal to $1 + \frac{A_c}{100A_s}$ times the permissible load for unencased steel columns as given in chapter 75 of this code.

74-19. The maximum permissible axial load (P) on columns composed of a metal shell completely enclosing a concrete core shall be as follows:

$$P = 0.25f'_c A_c + f_r A_s$$

The minimum thickness of the steel pipe shell shall be two-tenths of one inch.

74-20. The allowable steel stress, f_r, used in the design of spirally reinforced, tied and pipe columns shall not exceed the following stresses unless the material is identified by marking rolled or cast into the surface during manufacture in which case a stress of 0.36 of the yield point may be used.

Intermediate grade billet steel	15,000
Rail steel	15,000
Structural shapes	12,000
Silicon steel	18,000
Cast iron	9,000
Steel or wrought iron pipe	10,000
Cold drawn wire	20,000

74-21. Columns in any story that form a part of tiers of columns extending through two or more stories shall be designed for continuity of the longitudinal reinforcement from story to story. Longitudinal bars shall be spliced by welding or by lapping into the columns above. When spliced by lapping, the length of the lap shall be not less than twenty-four inches and not less than the length computed to transfer the entire load on the bars of the column above to bars extended from the column below.

In this computation, the unit bond stress on bars not enclosed within a column spiral shall be taken in accordance with section 305 of the Building Regulations referred to in section 74-1, and at forty per cent more than those values for bars enclosed within a column spiral. Longitudinal metal may be spliced by means of welding or by bolted or riveted connections or otherwise in any manner that will fully provide for all stresses to which the particular reinforcement is subjected as a result of its position in the column section. Details of connections and splices shall be such as to permit of easy and complete encasement in concrete and of placing both columns and floor steel in the designed location where the latter passes through the column section. Metal column cores, pipe shells, or structural steel shapes used as longitudinal reinforcement, shall be provided with mechanical means for receiving load wherever the increment of load received in any story exceeds the amount of load that can be transmitted from the concrete to the metal by bond at unit values permitted by this section for lapped splices.

74-22. The permissible axial load on reinforced concrete or composite columns having an unsupported length, greater than ten times the least lateral dimension of the column section, shall not exceed the value computed by the following formula:

$$P' = P\left(1.3 - .03\frac{h}{d}\right)$$

74-23. The permissible axial load on columns composed of structural metal sections solidly incased in concrete (of the thickness required for fireproofing) or of metal pipe shells filled with concrete, and in which one-half or more of the total column load is carried by the metal sections, and having an unsupported length, greater than ten times the least lateral dimension of the concrete section, shall not exceed the value computed by the following formula:

$$P' = P\left(1.16 - \frac{h}{70d}\right)$$

74-24. The recognized methods of analysis shall be followed in calculating stresses due to combined axial load and bending. The column section shall be not less than that required by the design for axial loads alone. The maximum fiber stresses in compression in the concrete shall not exceed the permissible values under axial loads only by more than sixty per cent. The tensile stresses in the longitudinal reinforcement shall not exceed the allowable unit stresses permitted in tension.

Concrete Studs in Bearing Walls

74-25. In single or multiple dwellings, two stories or less in height, bearing walls constructed with reinforced concrete studs may be used, if designed and constructed in accordance with the provisions of section 74-26.

74-26. Where concrete studs in bearing walls are designed in accordance with the provisions of this chapter for long columns, and are made an integral part of the wall and are tied together by concrete members at each floor level, the restrictions as to minimum diameter or thickness of columns, shall not apply.

Reinforced Concrete Walls

74-27. The permissible axial load on reinforced concrete walls, in which the vertical reinforcement is tied through the wall by means of one-fourth inch diameter ties spaced not more than twelve inches apart vertically and eighteen inches apart horizontally, shall be computed as for tied columns having the same h/d ratio. Where the amount of vertical reinforcement in the two faces is not equal the amount considered for vertical load shall be twice the amount in the side having the lesser reinforcement. The permissible axial load on reinforced concrete walls in which the reinforcement is placed in a single layer, or in which ties are not provided between the two layers to meet the above requiremnts shall be taken as $0.2f'_cA_c$.

74-28. Bearing walls of reinforced concrete shall be not less than six inches in thickness for the uppermost fifteen feet of their height, and for each successive twenty-five feet downward, or fraction thereof, the minimum thickness shall be increased one inch.

74-29. Reinforced concrete spandrel walls carried on the structural frame of buildings of skeleton construction shall be designed to resist the wind load as required by chapter 70 of this code. Such spandrel walls shall have a thickness of not less than four inches, except where greater thickness is required to meet the requirements of this code for fire-resistive value.

74-30. Exterior walls of reinforced concrete above the basement story shall be provided with the minimum percentage of reinforcement as required for roof slabs. Other walls shall be provided with the minimum percentage of reinforcement as required for floor slabs. The spacing of bars in each layer and each direction shall not exceed eighteen inches. Walls more than eight inches in thickness shall have the reinforcement in each direction placed in two layers. One layer consisting of not less than one-half nor more than two-thirds of the total required shall be placed not less than one and one-half inches, nor more than one-third of the thickness of the wall, from the exterior surface. The other layer comprising the balance of the reinforcement shall be placed not less than three-fourths inches and not more than one-third the thickness of the wall, from the interior surface.

Violation of Chapter Provisions

74-31. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 75

STEEL AND METAL CONSTRUCTION

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General Requirements

75-1. The design, fabrication, and erection of steel and metal construction shall be in accordance with the "Specification for the Design, Fabrication and Erection of Structural Steel for Buildings" as adopted by the American Institute of Steel Construction, and revised June 24, 1936, for steel made by the open-hearth process, except as otherwise provided in the building provisions of this code.

75-2. The design and execution of welding shall be in accordance with "Code I, Part A, Code for Fusion Welding and Gas Cutting in Building Construction" of the American Welding Society, edition of 1934, including "Appendices I, II, III and IV." Welding, or any combination of riveting, bolting and welding, may be used for the connecting or assembling of component parts of metal beams, columns, trusses, or other members, and for connecting such members to one another to make up the frame of a building or a structure; except that the strength of any one joint shall be considered as the strength of the welded joints alone or as the strength of the rivets or bolts. Surfaces to be welded shall be free from loose mill scale, rust, paint, or other foreign matter. No welding shall be performed in a strong wind or in rain until adequate protection has been provided.

Materials and Stresses

75-3. Steel and iron used in building and structures shall be at least equal to the requirements of the Standard and Tentative Standard Specifications of the American Society for Testing Materials as follows:

Structural steel: Serial designation A9-36 for structural steel for buildings. Manufactured only by the open-hearth process.
Rivet steel: Serial designation A141-36 for structural rivet steel.
Silicon steel: Serial designation A94-36 for silicon steel for buildings.
Cast steel: Serial designation A27-36T for steel casting.
Wrought iron: Serial designation A85-36 for wrought iron bars.
Cast iron: Serial designation A48-36 for iron casting.
Welding materials: Electrodes, welding wire, and welding rods used for welding shall be at least equal to the requirements of the Code of the American Welding Society, edition of 1934, for such materials.

75-4. The tensile stress in pounds per square inch of net section of any member shall not exceed the value given in the following table for the material of such member:

Structural grade steel	18,000
Silicon steel	24,000

Cast steel	15,000
Wrought iron	12,000
Cast iron	None
Rivet steel (heads not countersunk or flattened to less than three-eighths inch)	13,500
Metal in welds, bare wire	13,000
Metal in welds, shielded arc	16,000
Bolts in tension of structural grade steel	16,000
Bolts in tension of special high strength alloy steel	1/3 yield point as of A.S.T.M. specification.

75-5. The compressive stress in pounds per square inch on the gross section of any compression member with a ratio l/r not greater than twelve, shall not exceed the value given in the following table for the material of such member:

Structural grade steel	18,000
Silicon steel	24,000
Cast steel	15,000
Wrought iron	10,000
Cast iron	10,000
Metal in welds, compression on section through throat of butt weld	15,000

75-6. In formulae of this section, the symbols are defined as follows:

P = Axial load in pounds on compression member on basis of equivalent static load where impact of vibration is involved.

A = Gross section of metal in square inches at minimum cross section of member.

l = Unsupported length of member in inches.

r = Least radius of gyration of gross section in inches.

The compressive stress in pounds per square inch on the gross section of any compression member with a ratio l/r greater than twelve, shall not exceed the value given by the formulae, nor the maximum value stated below each formula. The ratio l/r for any compression member shall not exceed the value given in the following table:

Structural grade steel or silicon steel—

For columns and other compression members	120
For bracing	200
Cast steel	120
Wrought iron	120
Cast iron	70

Structural grade steel—

$$P/A = \frac{18{,}000}{1 + \dfrac{l^2}{18{,}000\, r^2}} \qquad (1)$$

with a maximum of 15,000

Silicon steel—

$$P/A = \frac{24{,}000}{1 + \dfrac{l^2}{18{,}000\, r^2}} \qquad (2)$$

For l/r not more than 120, with a maximum of 20,000

Cast iron—

$$P/A = 10{,}000 - \frac{60l}{r} \qquad (3)$$

Cast steel—

$$P/A = \frac{15{,}000}{1 + \dfrac{l^2}{15{,}000\, r^2}} \qquad (4)$$

with a maximum of 12,000

Wrought iron— $$P/A = 12{,}000-60\frac{l}{r} \quad \ldots\ldots(5)$$

with a maximum of.......... 10,000

Cast iron, cast steel, and wrought iron compression members shall not be used in any building of height greater than twice the least width, or greater than one hundred feet; provided, however, that this provision shall not apply to specially reinforced combination, pipe columns, and steel or iron columns filled with concrete which are designed in accordance with the provisions of chapter 74 of this code.

75-7. The total stress in pounds per square inch in the extreme fiber of any rolled shape or built up member in bending shall not exceed the values given in the following table, when lateral deflection is prevented. Stresses in the steel section of a composite beam, as specified in chapter 74 of this code shall be subject to the above limitation.

Structural grade steel	18,000
Silicon steel	24,000
Cast steel	15,000
Wrought iron	12,000
Cast iron, tension fibers	3,000
Cast iron, compression fibers	10,000
Metal in welds, bare wire, tension	13,000
Metal in welds, shielded arc, tension	16,000
Metal in welds—compression	15,000

75-8. The laterally unsupported length of any beam or girder shall not exceed forty times the width of the compression flange in the middle half of the span.

75-9. The stress in pounds per square inch on the extreme fiber of the gross section of compression flange of any rolled sections, plate girders, and built up members of structural grade steel, when the unsupported length of the compression flange exceeds fifteen times the least width of the compression flange, shall not exceed the value given by formula (6), in which S is the stress in pounds per square inch; l is the unsupported length in inches, and b is the least width of the compression flange in inches.

$$S = \frac{20{,}000}{1 = \frac{l^2}{2{,}000\,b^2}} \quad \ldots\ldots (6)$$

75-10. The maximum allowable shearing stress in pounds per square inch shall not exceed the value given therefor in the following table:

Pins	13,500
Power-driven rivets	13,500
Turned bolts in reamed holes, with a clearance of not more than one-fiftieth inch	13,500
Hand-driven rivets	10,000
Unfinished bolts	10,000
Metal in welds	11,300
Shear on gross section of girder webs—	
Structural grade steel	13,000
Silicon steel	16,000

Design Provisions

75-11. For members carrying the load of more than one hundred square feet of floor or roof area, no steel less than five-sixteenths inch thick shall be used in exposed exterior construction, and no steel less than 0.24 inch thick in the interior construction, except for linings or fillers, and in the webs of rolled structural shapes in interior construction.

75-12. The use of continuous beams and girders, designed in accordance with accepted engineering principles, shall be permitted provided that their connections be designed to carry all stresses to which they may be subjected. The connections at the ends of non-continuous beams shall be designed so as to avoid excessive secondary stresses due to bending.

75-13. In buildings and structures over fifty feet high, or of lesser height where the height exceeds one and one-half times the least width, all connections of columns to columns, all connections of beams, girders, and trusses to columns, all wind bracing connections, and all members of trusses, shall be power riveted, welded, or bolted with turned bolts in drilled or reamed holes with not more than one-fiftieth inch clearance. Other connections, except as provided in section 75-15, may be bolted with unfinished bolts in punched holes.

75-14. In buildings and structures less than fifty feet in height, connections may be made with unfinished bolts in punched holes, except as provided in sections 75-13 and 75-15.

75-15. Connections of members carrying live loads other than wind loads which produce impact or reversal of stresses, shall be power riveted, welded, or bolted with turned bolts in drilled or reamed holes, with not more than one-fiftieth inch clearance.

75-16. If value of bolts is figured on the nominal diameter, no threaded parts shall be in bearing, and lock washers or cupped nuts must be used to give full grip when turned tight. Bolts used in tension, or with threads in bearing, shall be figured on the net diameter of the smallest cross section. Finished bolts in reamed or drilled holes with greater clearance than one-fiftieth inch shall be classified as unfinished bolts.

75-17. In order to be considered effective in reducing the unsupported length of a compression member, bracing must be adequate to resist a lateral force equal to two per cent of the axial force.

75-18. Steel members encased in concrete may be figured as composite beams in accordance with the provisions of chapter 74 of this code.

75-19. Welds shall be subjected to test in such manner as to be stressed in shear to one and one-half times the computed shear reaction. At least three per cent of the welds in primary members, and not less than four tests of primary members, and at least one per cent of the welds in secondary members in each story shall be so tested as the work progresses and before it is encased in concrete or otherwise concealed. Should any of the primary joints fail under these tests, additional tests of five per cent of the total number of primary joints shall be made for each failure. Should any of the secondary joints fail under these tests, additional tests of one per cent of the total number of secondary joints shall be made for each failure. Any joints that have failed or show any signs of material damage as a result of such tests, shall be cut out, rewelded, and retested. In the case of shop welding such tests may be required before the member is erected at the building. All welding shall be done under supervision of a laboratory of recognized standing.

The commissioner of buildings shall be furnished, at the expense of the owner, with a certificate, from a laboratory of recognized standing, certifying that the tests required above have been made and giving the results of said tests.

Upon completion of all structural welding operations and required tests thereof, the architect or engineer responsible for the design of the structure, shall furnish to the commissioner of buildings a certificate, showing that the fabrication and erection of such welded structure has fulfilled the requirements of his design in every particular.

Violation of Chapter Provisions

75-20. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 76

CHIMNEYS

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General Provisions

76-1. An interior chimney is hereby defined as a chimney built wholly within the walls of a building and having lateral support from the building.

76-2. An exterior chimney is hereby defined as a chimney so built that at least one of its sides is coincident with the exterior walls of a building, by which it has lateral support.

76-3. An isolated chimney is hereby defined as any chimney, other than an interior or exterior chimney; also that part of a chimney above the building or walls which give it lateral support. Guys or struts shall not be considered as lateral supports for the purpose of this definition.

76-4. Every chimney shall be built of masonry, reinforced concrete or metal, with lining, where required, as hereinafter provided. Combustible materials shall not be included in the structure of any chimney nor in any chimney lining.

76-5. Every chimney shall be designed, constructed, and maintained to resist a wind pressure of twenty pounds per square foot on the portion less than one hundred seventy-five feet above the ground, and thirty pounds per square foot on the higher portion. The area for wind pressure may be considered as acting on two-thirds of the projected area for round chimneys, and on five-sixths of the projected area for octagonal chimneys. The stresses, due to combined wind and other loads, shall be provided for without increasing the allowable unit stresses.

76-6. Every chimney shall rest directly on the ground or shall be supported on structural members having four hour fire-resistive rating.

76-7. (a) *Where there are no other roof structures.* Every exterior and interior chimney in a building of other than fireproof or semi-fireproof construction shall extend not less than three feet above any portion within five feet of said chimney; and if said chimney projects through or adjoins a gable or hip roof, it shall project at least two feet above the ridge of such roof.

(b) *In relation to other roof structures.* Where a wooden tank, penthouse, or other combustible structure is located above the roof of the same building with a chimney or upon an adjoining building the required minimum height of such chimney shall be five feet above the top of such other structure; provided, however, that for each one foot of horizontal distance intervening between such chimney and such other structure, said required minimum height shall be reduced by four inches; provided, further, that the minimum required height above the roof shall be five feet.

76-8. Isolated masonry chimneys shall be built of solid or hollow units of burnt clay or shale, or a combination thereof. Hollow units for such chimneys shall be of special design adapted to chimney construction and subject to approval by the commissioner of buildings. The bond for such units shall be at least equivalent to the bond required for bearing walls. Mortar used in masonry chimneys shall be mortar No. 1 or mortar No. 2 as given in the table in section 73-20 of this code. Lime, sand, and Portland cement shall conform to the requirements therefor given in sections 73-14 to 73-17, inclusive. The maximum compressive stress in any isolated masonry chimney shall not exceed two hundred pounds per square inch, computed on the cross section of the wall of the chimney. The maximum compressive stress in any unit in such a chimney shall not exceed one-tenth the minimum ultimate compressive strength of individual units as set forth in chapter 73. When chimneys are built of hollow masonry units, the weight of the masonry wall shall not be assumed to exceed the weight of the individual units by more than five per cent of the individual units. Unit stress due to wind pressure shall not exceed seventy-five per cent of the unit compressive stress due to dead load.

76-9. Any masonry chimney outside or partly outside a building, but having one or more walls joined to a wall of the building, shall be built as required for an interior masonry chimney.

76-10. All the provisions of section 76-8, for isolated masonry chimneys, shall apply to interior and exterior masonry chimneys, with the added provisions that the walls of an interior masonry chimney shall be not less than eight inches thick in any case, and not less than twelve inches thick where they form a portion of a bearing wall of the building; except that small interior chimneys, lined as required by section 76-26, may have walls four inches less in thickness than required by this section and except that solid concrete units may be used for chimneys built in connection with exterior walls of hollow units in buildings not exceeding three stories in height.

76-11. Chimneys of reinforced concrete shall be constructed in accordance with the provisions of chapter 74 of this code, and shall have a minimum wall thickness of four inches exclusive of any lining.

76-12. *Metal thickness.* The thickness of metal in isolated metal chimneys shall be not less than the following:

For chimneys of not more than fourteen inches inside diameter	5/64 inch
For chimneys more than fourteen inches and not more than twenty-four inches inside diameter	3/16 inch
For chimneys of more than twenty-four inches inside diameter	1/4 inch

Stresses. No stress in any isolated metal chimney shall exceed the allowable stress given for such metal in chapter 75 of this code.

Interior Metal Chimneys

76-13. The thickness of metal in interior metal chimneys shall be not less than one-fourth inch.

76-14. No stress in any interior metal chimney shall exceed the allowable stress given for such metal in chapter 75 of this code.

76-15. Every interior metal chimney shall be braced to the floor and roof construction of the building at intervals not exceeding ten times the diameter of such chimneys nor more than forty feet.

76-16. Every interior metal chimney shall be surrounded by continuous air space from the lowest story through the roof, not less than four inches across at any point, and said air space shall be surrounded by brick, hollow tile, or reinforced concrete. No structural metal in such air space shall be without fireproof covering.

Linings

76-17. Chimney linings shall meet the provisions for one or more of the following six types:

Type 1. Fire clay brick, fire clay blocks, or other fire clay products, meeting the requirements of section 76-18.

Type 2. Uncalcined diatomaceous earth blocks or bricks meeting the requirements of section 76-19.

Type 3. Calcined diatomaceous brick meeting the requirements of section 76-20.

Type 4. Fused asbestos blocks or boards meeting the requirements of section 76-21.

Type 5. Shale brick meeting the requirements of section 76-22.

Type 6. Paving brick meeting the requirements of section 76-23.

All bricks, blocks, boards, or other products of fire clay, diatomaceous earth, asbestos, or other material, and all pointing cement required or permitted by the following sections dealing with chimney linings shall resist the disintegrating action of moist steam and the acid and gaseous fumes present in the chimneys.

76-18. Fire clay bricks, fire clay blocks, or other fire clay products shall be not less than three and three-fourths inches thick, unless supported on structural steel ledges at intervals of not more than twenty feet, in which case the thickness shall be not less than two inches. All such fire clay bricks, blocks, or other products shall be laid up in No. 1 mortar or acid resisting, plastic, refractory cement.

76-19. Uncalcined diatomaceous earth blocks or bricks shall contain not less than seventy-five per cent by weight of diatomaceous earth and fifteen per cent by weight of asbestos fiber, and shall be not less than one and one-fourth inches thick. After such diatomaceous earth blocks or bricks have been set, they, and all metal bands and ties exposed within the chimney, shall be plastered with semi-refractory cement, not less than one-half inch thick, thus making the total thickness of insulation not less than one and three-fourths inches. Uncalcined diatomaceous earth chimney lining shall not be used in any chimney in which the temperature exceeds sixteen hundred degrees Fahrenheit.

76-20. Calcined diatomaceous brick shall be semi-refractory, not less than four and one-half inches thick, free from shrinkage at temperatures below twenty-five hundred degrees Fahrenheit, and shall have a crushing strength of not less than three hundred and fifty pounds per square inch. All such calcined diatomaceous brick shall be laid up in acid resisting, plastic, refractory cement, and the surface shall be given a wash coating of such cement. Calcined diatomaceous chimney lining shall not be used in any chimney in which the temperature exceeds twenty-five hundred degrees Fahrenheit.

76-21. Chimney linings of fused asbestos or eighty-five per cent magnesia boards, sheets, or blocks shall meet the requirements for one of the following two types, but shall not be used in any chimney in which the temperature exceeds seven hundred degrees Fahrenheit:

Type (a) Solid blocks not less than one and one-half inches thick. After such solid blocks have been set, they, and any metal bands and ties exposed within the chimney shall be plastered with refractory cement not less than one-half inch thick, thus making the total thickness not less than two inches.

Type (b) Alternate flat and corrugated sheets of asbestos paper cemented together and fused to a minimum thickness of two inches. After such fused asbestos boards have been set into the chimney, they and all exposed metal bands or ties shall be pointed with refractory cement.

76-22. Shale brick shall be not less than three and three-fourths inches thick. Shale brick shall not be used in chimneys in which the temperature exceeds seven hundred degrees Fahrenheit.

76-23. Paving brick shall be not less than three and three-fourths inches thick. Paving brick shall not be used in chimneys in which the temperature exceeds seven hundred degrees Fahrenheit.

76-24. Every isolated masonry chimney shall be provided with an independent lining of fire brick, fire tile, or other approved refractory material, not less than three and three-fourth inches thick. Such lining shall extend at least two feet below the bottom of the smoke inlet and at least thirty feet above the top of the smoke inlet. There shall be an air space of at least two inches between such lining and the chimney wall. The thickness of the independent lining shall not be considered as a part of the required thickness of the wall.

76-25. Every circular or octagonal interior masonry chimney having an inside diameter or least dimension of more than thirty inches, and every non-circular or non-octagonal interior masonry chimney having any interior side dimension more than twenty-four inches, shall be provided with an independent lining and air space as required by section 76-24 for an isolated masonry chimney. The dimensions referred to in this section shall be measured in the clear space inside the lining.

76-26. Every circular or octagonal interior masonry chimney having an inside diameter or least dimension not exceeding thirty inches and every non-circular or non-octagonal interior masonry chimney having no interior side dimension exceeding twenty-four inches, shall be provided with a lining of burnt fire clay not less than three-fourths inch thick, extending from a point at least two feet below the bottom of the smoke inlet to the top of the chimney. No chimney lining required by this section shall be installed by being dropped or lowered into a previously constructed section of the structural part of the chimney; but said structural part shall be laid up with mortar around each successive length of lining as said lining is set. All joints and spaces between the masonry and the chimney lining shall be thoroughly slushed and grouted full as each course of masonry is laid.

76-27. Every reinforced concrete chimney shall be lined as provided in section 76-24, for isolated masonry chimneys.

76-28. Every interior metal chimney shall be provided with a lining for its entire height.

Violation of Chapter Provisions

76-29. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 77

FLOOR AND ROOF CONSTRUCTION

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77- 8. Materials
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Flat and Segmental Clay Tile Arches

77-1. All structural clay tile used in arch construction shall be at least equal to the requirements of the standard specifications of the American Society for Testing Materials for "Structural Clay Floor Tile" (Serial Designation C57-37T). All structural clay tile shall be bedded in mortars 1, 2, or 4, as indicated in chapter 73 of this code. All joints between tile shall be fully and evenly bedded with mortar. Tile slab fillers, the full depth of the tile, shall be used where necessary to close and key the arch. Arch centers shall not be removed until the mortar has set.

77-2. Flat arches of structural clay tile shall have a thickness above the bottom of the supporting beams of at least one and one-fourth inch per foot of span, but not less than six inches.

77-3. Segmental arches of structural clay tile shall have a rise of at least one inch per foot of span, and shall have a minimum thickness of one-half inch per foot of span but not less than six inches.

77-4. Both flat and segmental arches shall have skewbacks carefully fitted to the supporting beams and designed to resist both the horizontal thrust of the arch and vertical loads. Both flat and segmental arches shall have the tie rods designed to resist the thrust. These tie rods shall be of not less than three-fourths inch diameter and shall be protected the same as is required for other metal members of the floor system and shall be located below the center of arch at support and as much below as practicable.

77-5. All tie rods shall be of steel conforming to the requirements of the standard specifications of the American Society for Testing Materials for Structural Steel for Buildings (Serial Designation A9-36).

77-6. The tensile stress at the root of threads or at minimum section shall not exceed that allowed under chapter 75 of this code.

Precast Concrete Joist Floors

77-7. Precast concrete joist floor construction includes floor systems in which precast reinforced concrete joists are used in conjunction with precast or cast-in-place floor slabs.

77-8. Materials shall conform to the provisions of chapter 74 of this code.

77-9. The design and construction of these floors shall conform to the provisions of chapter 74 of this code except as provided in this chapter. When the top slab is cast-in-place and adequately reinforced and bonded to the joist by steel stirrups designed to resist the horizontal shear, the construction may be considered as a T-beam. The allowable designed stress for bond between slab and joist shall not exceed sixty pounds per square inch.

77-10. The depth of joists, exclusive of the floor slab, shall be not more than four times the width of the top or bottom flanges nor less than one twenty-fourth of the span length. The thickness of the top slab shall be not less than one-twelfth clear span between joists nor less than two inches and not less than one and one-half inches over the joists. Stirrups shall be not less than one-fourth inch round steel bars spaced not farther apart than six inches at the end one-fourth length of the joist and eighteen inches in the middle half of the joist. All stirrups shall project into the slabs and looped stirrups shall be set parallel with the length of the joists. The requirements of chapter 74 of this code for shear shall be met in all precast concrete joists.

Violation of Chapter Provisions

77-11. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 78

TRUSSED STEEL JOISTS

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General Provisions

78-1. Subject to the limitations of use prescribed by the building provisions of this code, trussed steel joists made of rolled shapes, round bars, or specially rolled bars riveted or welded together, or made by expanding rolled shapes, may be used for supporting floors or roofs between walls or between main girders or beams, where the clear span of the joist does not exceed thirty-two feet. Exposed trussed steel joists shall not be used for first floor panels except over accessible basement spaces, nor in any floor or roof above any room or space where a condition of high relative humidity occurs.

78-2. All steel used shall conform to the requirements of the standard specifications of the American Society for Testing Materials for structural steel for buildings (Serial Designation A9-36).

78-3. The thickness of any material in trussed steel joists shall be not less than one-eighth inch and in bridging systems not less than one-sixteenth inch.

78-4. Trussed steel joists, when erected and bridged, shall be designed to sustain safely eight hundred pounds at any panel point on any one joist.

78-5. All stresses used in the design of trussed steel joists shall be limited by the requirements for structural grade steel as given in chapter 75 of this code.

78-6. The maximum horizontal projection of any part of the compression flange from the plane of the web shall not exceed twelve times the thickness of the flange metal. Top chords may be considered as fixed laterally by a concrete slab above, or as supported laterally at points of attachment to a wood floor above. The ratio of "l" to "r" shall not exceed one hundred twenty. In computing the resistance of joists to construction loads, the top chords shall satisfy the additional requirement that it shall safely carry the required compression, using "l" as the distance between lines of bridging and "r" as the least radius of gyration around the vertical axis; but the ratio of "l" to "r" in this case shall not exceed two hundred. No bending stresses shall be assumed in top chords of trusses supporting concrete slabs which have a thickness of more than one-fourteenth of the distance between supports of the top chord; but for joists supporting concrete slabs thinner than this, and joists supporting wood floors, the theoretical bending stress for a uniform load shall be computed and the combined stress at any point in the top chord shall not exceed eighteen thousand pounds per square inch.

78-7. The spacing of the trussed steel joists is dependent on the design of the top slab computed in accordance with the provisions of this code for the materials used and in no case shall it be greater than twenty-four inches in floors or thirty inches in roofs; except that trussed steel joists may be used to support wood or sheet metal roofs, when spaced not more than seven feet apart.

78-8. All joints and connections in steel joists shall be made by connecting the members directly to one another by electric arc, spot or pressure welds, or by rivets. In the case of expanded joists, a portion of the metal may be left intact to form a connection. All joints and connections shall be capable of withstanding a stress at least three times the design stress, and shall be sufficiently rugged to resist the stressed incident to handling and erection. All intermediate joints shall be designed so as to be approximately symmetrical. The end portions may be designed as projecting beams. Stresses arising from eccentricity shall be included with other stresses in designing all members. The commissioner of buildings shall be furnished with a certificate from the designing architect or engineer that the design and fabrication of welded members has been done in accordance with the building provisions of this code.

Bridging

78-9. The number of lines of bridging provided shall be not less than required by the following table:

Clear span	Number of lines of bridging
7 feet or less	None.
Over 7 feet and not over 14 feet	One row, near center.
Over 14 feet and not over 21 feet	Two rows.
Over 21 feet and not over 32 feet	Three rows.

78-10. Each line of bridging shall be capable of transferring not less than five hundred pounds from each joist to the adjoining joists. All bridging shall be designed in accordance with the structural provisions of this code pertaining to buildings.

78-11. In the case of joists provided with nailer strips carrying a wood deck, or of joists clipped to a concrete deck, the deck may be used as the top member of the bridging system.

78-12. Nailing strips, when used, shall be attached continuously throughout their entire length to the top chords of steel joists, or shall be bolted or otherwise attached at intervals not exceeding eighteen inches on centers.

Erection

78-13. Joists shall have a bearing of at least four inches on masonry or concrete, and at least two and one-half inches on steel; but the unit bearing pressure shall in no case exceed that allowed for the materials used as stated elsewhere in the building provisions of this code.

78-14. The size and arrangement of anchors shall be equivalent to that specified for wood and steel joists as called for in chapter 73 of this code.

Violation of Chapter Provisions

78-15. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 79

ELEVATORS, DUMBWAITERS, ESCALATORS, MECHANICAL AMUSEMENT DEVICES

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General Provisions

* **79-1.** The following provisions of construction of this chapter shall apply to all elevators, dumbwaiters, and escalators; to all mechanical equipment used for, or in connection with, the raising or lowering of any stage, or orchestra floor, or any platform and to all mechanical amusement devices and apparatus in parks, carnivals and the like, which may hereafter be installed. They shall also apply to all existing aforementioned devices whenever such existing devices are altered in any way which may change the capacity or speed of the device, the purpose for which it is used, or its operating, controlling or safety equipment, but they shall not apply to the repair of such existing devices which are necessary to keep same

in safe operating condition, nor to the replacement of parts with other parts which serve a similar purpose to those which are replaced, providing safe conditions are maintained; nor to other changes in existing devices, except as hereinafter prescribed.

(a) When an existing elevator is altered so as to change its classification to passenger elevator, or its type to electric or hydraulic elevator, such elevator shall comply with all of the provisions of this code.

(b) When an existing power elevator is altered only so as to change its method of operation to any other type than car switch operation, such elevator need comply only with the provisions for interlocks, electric contacts, and locks and terminal stopping devices.

(c) When an existing power elevator is altered only so as to increase its rated speed more than fifteen per cent, such elevator need comply only with the provisions for car and counterweight safeties, buffers, speed governors, interlocks, electric contacts and locks, and terminal stopping devices, except that the limit of the pull out of the governor cable may be six feet.

(d) When an existing power elevator is altered only so as to increase its rated load, such existing elevator need comply only with the provisions for car and counterweight safeties, interlocks, electric contacts and locks, and terminal stopping devices.

When the alteration of an existing device consists solely of a change in the character of electric power supply, only such parts, the operation of which is thereby affected, need be changed, except that in all cases electrically released brakes shall be installed. The installation of additional equipment in connection with an existing device, a change in the enclosure of an elevator hatchway or the installation of new cabs without major changes in other parts of an elevator installation shall not be classed as an alteration, but such equipment as is added shall comply with the provisions of this chapter. These provisions shall not apply to other raising, lowering, or conveying devices; nor shall they apply to elevators used only for handling building materials, or tools in any building in course of construction, but the commissioner of buildings shall make such reasonable requirements as he may deem necessary for public safety in the operation of such elevators. [Amend. Coun. J. 5-2-40, p. 2417.]

79-2. The terms used in this chapter are hereby defined as follows:

Buffer. A device designed to absorb the impact of an elevator, or dumbwaiter car, or counterweight, at the extreme limits of travel.

Cab, elevator. An enclosure consisting of walls and top built upon a car platform.

Car. The load carrying unit.

Car door or gate. A door or gate in or on an elevator or dumbwaiter car.

Car leveling device. Any mechanism or control which will move a car within a limited zone toward, and stop the car at, the landing. For an elevator, the device may also be used for emergency operation of the car throughout its entire travel and for safe lifting purposes.

Car frame. A supporting frame to which the platform upper and lower sets of guide shoes and the hoisting cables are usually attached.

Car platform. The structure which forms the floor of the car and directly supports the load.

Clearance, bottom. The vertical distance between any obstruction in the pit, exclusive of the compensating device, buffer and buffer supports, and the lowest point of the understructure of the car exclusive of the safeties, car frame channels, and guide shoes and other necessary equipment attached to the underside of the platform, when the car floor is level with the bottom terminal landing.

Clearance, top.

(a) Car. The top clearance of a car is the distance the car floor can travel above the level of the top terminal landing without any part of the car, or devices attached thereto, coming in contact with the overhead structure.

(b) Counterweight. The top clearance of a counterweight is the shortest vertical distance between any part of the counterweight structure and the nearest part of the overhead structure, or any other obstruction when the car is level with the bottom terminal landing.

Door closer. A device, operated by gravity or other means, which will automatically close a door when released by the operator, or by suitable automatic means.

Door unit contact system. **A contact system which requires that the hatch-**

way door or gate, at which the elevator is standing, must be closed before the elevator can leave the landing, but which does not prevent the operation of the car if other doors in the hatchway are not closed.

Dumbwaiter. A raising and lowering mechanism equipped with a car, the floor area of which does not exceed nine square feet, whose compartment height does not exceed four feet, the capacity of which does not exceed five hundred pounds and which is used exclusively for carrying freight.

Electric contact, car door or gate. A device to open the control circuit, or an auxiliary circuit, unless the car door or gate is in the closed position and thus prevent operation to move the car away from the landing.

Electric contact, hatchway door or gate. A device to open the control circuit, or an auxiliary circuit, unless the hatchway door or gate at which the car is standing, is in the closed position and thus prevent operation to move the car away from the landing.

Elevator. A raising and lowering mechanism equipped with a car or platform which moves in guides in a substantially vertical direction, further defined as of the following types:

(a) Auxiliary power elevator. An elevator having a source of mechanical power in common with other machinery.

(b) Chain driven elevator. An elevator having its machine connected to a reversible motor, engine, or turbine by a chain.

(c) Double-belted elevator. An auxiliary power elevator in which the direction of travel is changed without reversal of the prime mover.

(d) Electric elevator. An elevator operated by an electric motor directly applied to the elevator machinery.

(e) Freight elevator. An elevator designed for carrying freight and the operator and persons necessary for loading and unloading.

(f) Gravity elevator. An elevator in which gravity is the source of power.

(g) Hand elevator. An elevator driven by manual power.

(h) Hydraulic elevator. An elevator operated by liquid under pressure.

(1) Plunger elevator. A hydraulic elevator having a ram or plunger directly attached to the under side of the car platform.

(2) Rope geared hydraulic elevator. A hydraulic elevator in which the movement of the car is obtained by multiplying the travel of a piston or ram by a system of sheaves over which the hoisting ropes operate.

(i) Passenger elevator. An elevator which is designed to carry persons.

(j) Power elevator. An elevator operated otherwise than by gravity or manually.

(k) Private residence elevator. A power passenger elevator serving a single family, installed in a dwelling and having a rated capacity of not more than seven hundred pounds and a rated speed of not more than fifty feet per minute.

(l) Sidewalk type elevator. A freight elevator having a speed of not more than fifty feet per minute and having the top landing not more than four feet above grade level at the point where elevator is located, the platform of which elevator is suspended or supported at or below the platform level and in such a manner as will not permit tipping of the platform.

(m) Single-belted elevator. An elevator machine connected to a reversible motor, engine, or turbine by a belt.

(n) Steam elevator. An elevator operated by a steam engine directly applied to the elevator machinery.

Elevator control. A system of regulation by which the starting, stopping, direction of motion, acceleration, speed, and retardation of an elevator are governed and further defined as of the following types:

(a) Generator field control. A system in which control is accomplished primarily by the use of an individual generator for each elevator, in which the voltage applied to the hoisting motor is adjusted by varying the strength and direction of the generator field.

(b) Multi-voltage control. A system in which control is accomplished primarily by impressing successively on the armature of the hoisting motor a number of substantially fixed voltages.

(c) Rheostatic control. A system in which control is accomplished primarily by varying resistance or reactance in the armature or field circuit of the hoisting motor, or by any combination thereof.

Emergency release. A device to make the door or gate electric contacts or door interlocks inoperative in case of emergency.

Emergency stop switch. A device in a car used to cut off the power from the machine independently of the operating devices.

Escalator. A moving inclined continuous stairway or runway used for raising or lowering passengers.

Hatchway. The space in which an elevator or dumbwaiter is designed to operate.

Hatchway door or gate. The hinged or sliding portion of the hatchway inclosure for access to the car at any landing.

Hatchway door interlock. A device, the purpose of which is to prevent the operation of the machine to move the car away from a landing unless the hatchway door at that landing is locked in the closed position; and to prevent the opening of the hatchway door from the landing side, except by special key, unless the car is at rest within the landing zone, or is coasting through the landing zone, with its operating device in the stop position.

(a) Door unit interlock system. An interlock system which requires that the hatchway door at which the elevator is standing must be locked in the closed position before the elevator can leave the landing, but which does not prevent the operation of the car if other doors in the hatchway are not locked.

(b) Hatchway unit interlock system. An interlock system which will prevent the operation of the car unless all hatchway doors are locked in the closed position.

Hatchway enclosure. Any structure which separates the hatchway, either wholly or in part, from the floors or landings through which the hatchway extends.

Hatchway unit contact system. A contact system which will prevent the operation of the car unless all hatchway doors are closed.

Landing. That portion of a floor or platform used to receive and discharge passengers or freight.

Landing zone. The space from a point not more than eighteen inches below the landing to a point not more than eighteen inches above the landing.

Load, rated. The load which the elevator or dumbwaiter is designed to carry at rated speed.

Machine. The machinery and its equipment used in raising or lowering the car or platform, of the following types:

(a) Direct-drive machine. A machine in which the power is transmitted directly to the driving sheave or sheaves without intermediate mechanism or gears.

(b) Spur-geared machine. A machine in which the power is transmitted to the driving sheaves or drum through spur gearing.

(c) Traction machine. A machine in which the movement of the car and counterweight is obtained by means of traction between the driving drum, sheave or sheaves and the hoisting cables.

(d) Winding drum machine. A machine in which the cables are fastened to and wind on a drum.

(e) Worm-geared machine. A machine in which the power is transmitted to the driving sheaves and drum through worm gearing.

Mechanical amusement device. Any device designed or used to move a person or to permit the movement of a person by mechanical means in any direction for amusement and operated within a space or over a route devoted exclusively to such use.

Operating device. The device used to actuate the control.

Operation. The method of actuating the control, of the following types:

(a) Automatic operation. Operation by means of buttons or switches, both in the car and at the landings, the momentary pressing of which will cause the car to start and automatically stop at the floor corresponding to the button pressed.

(a-1) Single automatic operation. Operation by means of one button in the car for each landing level served and one button at each landing so arranged that if any car or landing button has been pressed, the pressure of any other car or landing operating button will have no effect on the operation of the car until the response to the first button has been completed.

(a-2) Non-selective collective automatic operation. Operation by means of one button in the car for each landing level and one button at each landing, wherein all stops registered by the momentary pressure of landing or car buttons are made, irrespective of the number of buttons pressed, or the sequence in which the buttons are pressed. With this type of control the car stops at all landings for which buttons have been pressed, making the stops in the order in which the landings are reached after the buttons have been pressed, but irrespective of its direction of travel.

(a-3) Selective collective automatic operation. Operation by means of one button in the car for each landing level served and by "up" and "down" buttons at the landings, wherein all stops registered by the momentary pressure of the car buttons are made as defined under non-selective collective automatic operation, but wherein the stops registered by the momentary pressure of the landing buttons are made in the order in which the landings are reached in each direction of travel after the buttons have been pressed. With this type of control, all "up" landing calls are answered when the car is traveling in the "up" direction and all "down" landing calls are answered when the car is traveling in the "down" direction, except the uppermost or lowermost calls which are answered as soon as they are reached, irrespective of the direction of travel of the car.

(b) Car-switch automatic floor stop operation. Operation in which the stop is initiated by the operator from within the car with a definite reference to the landing at which it is desired to stop, after which the slowing down and stopping of the elevator is automatically effected.

(c) Car-switch operation. Operation wherein the movement of the car is directly and solely under the control of the operator by means of a switch or buttons in the car.

(d) Continuous-pressure operation. Operation with "up" and "down" buttons or an "up" and "down" switch in the car and at each landing, except the terminal landings, at each of which there may be one button or switch, any one of which may be used to control the movement of the car in the direction for which the buttons is pushed or the switch actuated, but only so long as the button or switch is manually held in the operation position. Landing stops are not automatic.

(e) Dual-operation. Operation whereby the elevator is arranged to be operated as an automatic operation elevator through landing and car buttons or switches, or as a manual operation elevator by an operator in the car, who may either use a car switch or the buttons provided in the car. When operated by an operator, upon the throwing of a suitable switch, or switches, the car can no longer be started by the landing button. These buttons may, however, be used to signal the operator that the car is desired at a certain landing.

(f) Pre-register operation. Operation in which signals to stop are registered in advance by buttons in the car and at landings. At the proper point in the car travel, the operator in the car is notified by a signal to initiate the stop, after which the landing stop is automatic.

(g) Signal operation. Operation by means of buttons or switches in the car and "up" and "down" direction buttons or switches at the landings, by which predetermined landing stops may be set up or registered for an elevator or for a group of elevators. The stops set up by the momentary pressure of the car buttons are made automatically in succession as the car reaches those landings, irrespective of its direction of travel or the sequence in which the buttons are pressed. The stops set up by the momentary pressure of the "up" and "down" buttons at the landing are made automatically by the next car in the group approaching the landing in the corresponding direction, irrespective of the sequence in which the buttons are pressed. With this type of operation the car can be started only by means of a starting switch or button in the car.

Overhead structure. All of the equipment supporting structure and platforms at the top of the hatchway.

Overtravel, bottom.

(a) Car. The bottom overtravel of the car is the distance the car floor can travel below the level of the bottom terminal landing until the fully loaded car rests on the buffers, and includes the resulting buffer compression.

(b) Counterweight. The bottom overtravel of the counterweight is the distance the counterweight can travel below its position when the car platform is level with the top terminal landing and until the counterweight rests on the buffers, and includes the resulting buffer compression.

Overtravel, top. The distance provided for the car floor to travel above the level of the upper terminal landing until the car is stopped by the normal terminal stopping device.

Pit. That portion of a hatchway extending below the level of the bottom landing to provide for bottom overtravel and clearance and for parts which require space below the bottom limit of car travel.

Power operated door or gate. A door or gate opened and closed by power as hereinafter described, of the following types:

(a) Power closed door or gate. A door or gate which is manually opened and is closed by power other than by hand, gravity, springs, or the movement of the car.

(b) Power-opened, self-closing door or gate. A door or gate which is opened by power other than by hand, gravity, springs, or the movement of the car, and when released by the operator is closed by energy stored during the opening operation.

(c) Power operated door or gate, automatically opened. A door or gate which is opened other than by hand, gravity, springs, or the movement of the car, the opening of the door being initiated by the arrival of the car at or near the landing. The closing of such door or gate may be under the control of the operator or may be automatic.

(d) Power operated door or gate, manually controlled. A door or gate which is opened and closed by power other than by hand, gravity, springs, or the movement of the car, the door movement in each direction being controlled by the operator.

Power operated door or gate device. A device to operate the hatchway door and car door or gate by power other than by hand, gravity, springs, or the movement of the car.

Safety, car or counterweight. A mechanical device attached to the car or counterweight frame to stop and hold the car or counterweight in case of predetermined overspeed free fall or through slackening of the cables.

Speed, rated. The speed which the car is designed to attain when carrying its rated load in the "up" direction.

Terminal stopping device, final. An automatic device for stopping the car and counterweight from rated speed within the top clearance and bottom overtravel, independently of the operation of the normal terminal stopping device and the operating device.

Terminal stopping device, normal. An automatic device for stopping the car within the overtravel independently of the operating device.

Travel or rise. The vertical distance between the bottom terminal landing and the top terminal landing. [Amend. Coun. J. 5-2-40, p. 2417.]

79-3. It shall be unlawful for any operator of any elevator in the city, wherein passengers are conveyed, to start such elevator until all doors of such elevator and leading into such elevator are closed and locked, or to open the doors of such elevator until said elevator has come to a full and complete stop, unless the elevator is equipped with interlocks and a slow speed automatic levelling or landing device, which will stop the car at the floor.

79-4. Whenever any accident shall occur, causing injury to life or limb to any person in or about an elevator, dumbwaiter, escalator or mechanical amusement device, or while getting on or off of same, or which shall in any way impair the safety of the equipment, such accident shall be reported at once by the operator of the equipment, owner, superintendent, lessee or manager of the building to the commissioner of buildings. No broken or damaged parts of such elevator, dumbwaiter, escalator, or mechanical amusement device shall be moved or displaced, nor shall repairs be made thereon, nor shall said elevator, dumbwaiter, escalator, or mechanical amusement device be operated until an investigation into such accident has been made by the commissioner of buildings or his duly authorized agent. A full report in writing of the result of such investigation shall be filed in the department of buildings and the commissioner of buildings shall keep a complete record of all such accidents and reports thereon.

Hatchway Requirements for Power Elevators

79-5. The minimum clearance between cars, counterweights, and hatchway enclosures shall be as follows:

Car and hatchway enclosure. Between the sides of the car and the hatchway enclosure three-fourths inch.

Car and counterweight. Between the car and its counterweight one inch.

Car and thresholds. Between the car platform and the landing thresholds for an elevator using side post construction one-half inch and for an elevator using corner post construction three-fourths inch.

Landing and enclosure. The maximum clearance between the landing side of the car platform and the hatchway enclosure shall be as follows:

(a) Between the loading side of the car platform at the car entrance and the enclosure, five inches, except where doors are installed wholly within the hatchway where this distance may be increased to seven and one-half inches.

(b) Between the car platform and the landing threshold, one and one-half inches.

79-6. The depths of pits measured from the thresholds of the bottom landing shall be not less than the following:

(a) Elevators having a total travel of not more than fifteen feet, a speed not more than fifty feet per minute and not equipped with buffers, and private residence elevators, two feet.

(b) Elevators equipped with spring buffers or their equivalent, except private residence elevators, three feet, six inches.

(c) Elevators equipped with oil buffers or their equivalent, the distance between the upper surface of the car platform and the bottom of the buffer strike plate plus the fully extended buffer, plus three inches.

(d) Additional pit depth shall be provided if necessary to provide clearance for compensating rope sheaves and any vertical movement thereof, and for any obstruction in the pit when the buffers are fully compressed. When an elevator car, except of the sidewalk type and private residence elevator, rests on the fully compressed buffer, there shall be a clear space vertically of not less than two feet between the lowest projection of the underside of the car platform, except guide shoes and aprons attached to the car sills, safeties, car frame channels, junction boxes, and other necessary equipment attached to the underside of the platform and any obstruction in the pit, exclusive of the compensating device, buffers, and buffer supports.

(e) The depth of pits, measured from the threshold of the bottom landing, may be reduced where structural conditions make this necessary, if the construction used provides a two foot clearance, as hereinbefore prescribed. Where precompression is used, the depth of the pit may be reduced to correspond with car clearances and counterweight clearances hereinafter prescribed.

79-7. When an elevator car is at its top landing, the clear distance between the top of the crosshead of the car and any obstruction in the hatchway above it shall be not less than:

(a) If spring buffers, or their equivalent are used, the clearance between the bottom of the counterweight buffer and its striking block, in any case not less than six inches, plus the compression of the buffer, plus two feet; provided, however, that if the car is a private residence elevator and is equipped with an emergency stop switch installed in an accessible point on top of the car, the clearance may be reduced one foot.

(b) If oil buffers or their equivalent are used, the clearance between the bottom of the counterweight buffer and its striking block, in any case not less than six inches, plus one and one-half times the stroke of the buffer corresponding to governor tripping speed of the elevator at full speed, plus two feet. If retarders are installed which reduce the speed of the car at terminal landings, and the stroke of the buffer is reduced correspondingly, not less than the clearance between the bottom of the counterweight buffer and its striking block, in any case not less than six inches, plus the stroke of the buffer corresponding to governor tripping speed of the elevator at full speed, plus two feet, plus one-half of the stroke of the buffer used. If provision is made to eliminate the jump of the car at counterweight engagement, not less than the clearance between the bottom of the counterweight buffer and its striking block, in any case not less than six inches, plus the stroke of the buffer used, plus two feet. If precompression is used, the clearance may be reduced by the amount of precompression provided a spring return type of buffer is used.

(c) When the car crosshead is two feet from the nearest obstruction above it, no projection on the car shall strike any part of the overhead structure.

(d) Where the depth of an elevator pit is reduced, as hereinbefore described the top clearance may be reduced accordingly. [Amend. Coun. J. 5-2-40, p. 2417.]

79-8. When an elevator car is level with the bottom landing, the clear distance between the top of the counterweight and any obstruction in the hatchway above it shall be not less than:

(a) If spring buffers or their equivalent are used, the clearance between the top of the car buffer and its striking block, in any case not less than three inches. plus the compression of the buffer, plus six inches.

(b) If oil buffers or their equivalent are used, the clearance between the top of the car buffer and its striking block, in any case not less than three inches, plus one and one-half times the stroke of the buffer corresponding to the governor tripping speed of the car at full speed, plus six inches. If provision is made to eliminate the jump of the counterweight at car buffer engagement, not less than the clearance between the top of the car buffer and its striking block, in any case not less than three inches, plus the stroke of the buffer used, plus six inches. If retarders are installed which reduce the speed of the car at terminal landings and the stroke of the buffer is reduced correspondingly, not less than the clearance between the top of the car buffer and its striking block, in any case not less than three inches, plus the stroke of the buffer corresponding to the governor tripping speed of the car at full speed, plus six inches, plus one-half the stroke of the buffer used. If precompression is used, clearance may be reduced by the amount of precompression.

(c) When the depth of an elevator pit is reduced, as hereinbefore described, the top clearance may be reduced accordingly. [Amend. Coun. J. 5-2-40, p. 2417.]

79-9. For sidewalk type elevators there shall be provided an overtravel of not less than six inches at the top and of not less than three inches at the bottom.

79-10. Machinery and sheaves shall be so supported and held as to prevent any part from becoming displaced. No elevator machinery, except overhead sheaves for private residence elevators, and idler and deflecting sheaves with their guards or frames and devices for limiting or retarding the car speed and their accessories, shall be hung underneath the supporting beams at the top of the hatchway. Supporting members for elevator machinery hung underneath beams shall not depend solely on cast iron in tension.

79-11. Exposed gears, sprockets, tape sheaves and ropes, and tapes passing through secondary levels shall be protected with substantial metal guards securely fastened in place and arranged to provide adequate protection for attendants and the public against injury. Deflecting sheaves extending below the machine level shall be provided with adequate guards. Substantial metal guards shall be installed to separate every counterweight hatchway from every pit and shall extend at least six feet above the floor of such pit except where compensating chains or cables are attached to the counterweight, in which case such guards shall not be required on the side of the counterweight facing the elevator. [Amend. Coun. J. 5-2-40, p. 2417.]

79-12. Where winding drum machines are used, a permanent beam or bar shall be provided at the top of the counterweight guides and beneath the counterweight sheaves to prevent the counterweights from being drawn into the sheaves. It shall be so arranged, and of such strength, that the cables will be pulled out of the sockets before there is any undue deflection of the beam.

79-13. All wiring in connection with elevators shall be done to conform with the requirements of the electrical provisions of this code.

79-14. Hatchway door interlocks shall be provided on the hatchway doors of passenger elevators.

79-15. The hatchway doors of hydraulic passenger elevators shall also be provided with an automatic door closer which will close the doors should the car creep more than six inches away from the landing.

79-16. An emergency release shall be installed in each car, which is arranged for operation through a car switch by an operator in the car, including dual operated elevators, by which such operator can operate the car from within the car only, independent of the position of the hatchway doors. The emergency release in dual operated elevators shall be arranged so as to be inoperative when the car is operated as an automatic elevator. [Amend. Coun. J. 5-2-40, p. 2417.]

79-17. Hatchway doors shall be arranged to be opened by hand from the hatchway side, except when locked out of service. Neither the main exit doors, nor the doors at the bottom terminal landing shall be locked out of service while the elevator is in operation. Hatchway doors for passenger elevators shall be arranged so that it is unnecessary to reach back of any panel, jamb, or sash to operate them. If the entire control of a passenger elevator is located in the car, the hatchway doors shall be so arranged that they cannot be opened from the landing side, except by service or emergency keys as hereinafter prescribed. If the control is not located entirely in the car, the hatchway doors shall be so arranged that unless the car is in the landing zone, the doors cannot be opened from the landing side, except by service or emergency keys.

79-18. Hangers for power operated hatchway doors shall be designed to withstand a downward thrust of five times and an upward thrust of four times the weight of the door. Means shall be provided to prevent hangers for all sliding hatchway doors from jumping the tracks. Stops shall also be provided to prevent the hanger carriage from leaving the ends of the track, or suitable stops may be provided on the door only.

79-19. Hatchway doors for freight elevators, where the elevator can be operated only from inside the car, shall be provided with interlocks or electric contacts and locks. Hatchway doors for automatic and double button elevators, having a speed not to exceed one hundred fifty feet per minute and equipped with vertical type doors or gates, shall be provided with interlocks or electric contacts and locks. Hatchway doors for other freight elevators, except hatch covers for sidewalk type elevators, shall be provided with interlocks. Where electric contacts are provided on a hatchway door and are not a part of an interlocked system, the lock or latch and contact shall be so arranged as to insure the door being in position to be locked or latched when or before the contact is closed. Door electric contacts and door locks or latches shall be so located as normally to be inaccessible from the landing side.

79-20. An emergency release shall be installed in each car, except a sidewalk type elevator arranged for operation by an operator in the car, by which such operator can operate the elevator from within the car only, independent of the position of the hatchway doors. The emergency release in dual operated elevators shall be arranged so as to be inoperative when the car is operated as an automatic elevator.

79-21. If the entire control of a freight elevator is located in the car the hatchway doors shall be so arranged that they cannot be opened from the landing side except by service or emergency keys hereinafter prescribed. If the control is not located entirely in the car, the hatchway doors shall be so arranged that unless the car is in the landing zone, the doors cannot be opened from the landing side, except by service or emergency keys.

79-22. A service key shall be provided for every elevator, except of the automatic or the continuous control type, to open the hatchway door from the landing side at the landing where the car is normally parked out of service. This key shall open this door only when the car is in the landing zone and shall open no other door in the hatchway. Where two or more cars are normally parked out of service at the same landing, the service key may be arranged to open all the hatchway doors of such cars at the landing. [Amend. Coun. J. 5-2-40, p. 2417.]

79-23. An emergency key shall be provided for every elevator which, irrespective of the position of the car, will from the landing side open the hatchway door only at the landing where the car is normally parked and at the lowest landing; or if for an elevator operating in a blind hatchway, it shall also open the first hatchway door above the blind portion and no other door in the hatchway. For an elevator operating in a single hatchway it shall open all hatchway doors.

Emergency keys shall be especially designed to prevent easy duplication. [Amend. Coun. J. 5-2-40, p. 2417.]

79-24. The emergency key shall be placed in a break glass receptacle clearly marked "ELEVATOR DOOR KEY, FOR FIRE DEPARTMENT AND EMERGENCY USE ONLY," at the landing of each elevator or group of elevators that is nearest the street entrance to the building. If there is more than one street entrance, an emergency key in a receptacle marked as described shall be located in a position conveniently reached from each entrance.

The same emergency key shall fit the hatchway doors of all elevators in any group. [Amend. Coun. J. 5-2-40, p. 2417.]

79-25. The door interlock system shall prevent the opening of any hatchway door from the landing side except by a special key as hereinbefore described, unless the elevator is at rest within the landing zone, or is coasting through the landing zone with its operating device in the "STOP" position. The interlock shall permit the operation of the car when the emergency release is in temporary use, or when the car is being moved by a car leveling device. An interlock system of the door unit type is prohibited. [Amend. Coun. J. 5-2-40, p. 2417.]

79-26. For elevators employing a type of operation that does not require the presence of an operator in the car, and for all elevators where the hatchway door is not equipped with a door closer, the door shall be considered in the closed position only when the door is within three-eighths inch of the nearest face of the door jamb, or, if the doors are of the bi-parting type, only when the doors are within three-eighths inch of contact with each other.

Where the hatchway door of an elevator, requiring the presence of an operator in the car is equipped with a door closer, the door shall be considered to be in the closed position and the car may be started when the door is within four inches of the nearest face of the jamb, or, if the doors are of the bi-parting type, when the sections are within four inches of contact with each other, if at this position and any other up to full closure, the door cannot be opened from the landing side more than four inches from the jamb, or bi-parting sections more than four inches from each other, provided the door closer is of a type which will eventually close the door to the fully closed position and lock it in this position. [Amend. Coun. J. 5-2-40, p. 2417.]

79-27. The interlocks for all hatchway doors shall be so designed that the doors are locked in the closed position before the car can be operated, except that for private residence elevators the interlocks may be so arranged that after the doors are closed the car may move away from a landing a distance of not more than twelve inches before the locking operation takes place, providing that should the locking operation fail to take place, further movement of the car will open the circuit and apply the brake. If a private residence elevator is arranged to be operated in this manner, an apron shall be installed on the front of the car platform extending below the car floor a distance equal to that which the car can travel before the door is locked.

79-28. Interlock contacts shall be positively opened, and the functioning of the interlock to prevent movement of the car shall not be solely dependent upon the action of a spring or springs, nor gravity, nor an electric circuit. If an electric circuit is used, its interruption shall prevent the movement of the car. [Amend. Coun. J. 5-2-40, p. 2417.]

79-29. The type and make of door interlock shall be approved by the commissioner of buildings on the basis of the "tests of interlocks" hereinafter described, made by or under the supervision of a competent recognized laboratory. Approved interlocks shall be suitably and plainly marked for identification. The marking shall be permanent and so placed as to be readily visible when the interlocks are mounted in position. Auxiliary appliances forming a part of, or used in conjunction with, an interlock shall be similarly marked. Marking shall include the manufacturer's name or trade-mark, type or style letter, or number and rated voltage.

79-30. The contact shall permit the operation of the car when the emergency release is in temporary use, or when the car is being moved by a car-leveling device. An electric contact of the door unit type is prohibited. Hatchway door contacts shall be designed so that they are positively opened by a lever or other device attached to and operated by the door.

79-31. The functioning of a hatchway door electric contact to prevent the movement of the car shall be independent of the action of a spring or springs in tension and of the closing of an electric circuit. If springs are used, they shall be in compression. If an electric circuit is used, its interruption shall prevent the movement of the car.

79-32. Each type and make of hatchway door electric contact shall be approved by the commissioner of buildings on the basis of "endurance test," "current interruption test," "test in moist atmosphere," "mis-alignment test" and "insulation test" hereinafter described, made by or under the supervision of a competent recognized laboratory. Approved contacts shall be suitably marked for identification as required for interlocks.

79-33. The emergency release shall be in the car, plainly visible to the occupants of the car. It shall be easily accessible to the operator and shall be provided with a break glass cover and with means for breaking the glass. It shall be of such a design that the operator must hold the emergency release in the operative position to operate the car. Emergency releases shall be constructed so that they cannot be readily tampered with, or plugged in the release position. Rods, connections, and wiring used in the operation of the emergency release, which are accessible from the car shall be enclosed and protected from injury. Each make and type of emergency release shall be tested and approved by the commissioner of buildings if found to show compliance with the foregoing requirements and the "insulation test" hereinafter described.

79-34. Door counterweights shall run in metal guides from which they cannot become dislodged, or shall be enclosed or boxed in. The bottoms of the guides or enclosures shall be so constructed as to retain the counterweight if the counterweight rope breaks.

79-35. If the space under elevator hatchways and counterweights is used for any purpose, buffers equipped with safety devices conforming to the requirements prescribed for "car and counterweight buffers" and "car and counterweight safeties and speed governors" shall be provided for both cars and counterweights.

Power Elevators

79-36. The provisions of the following sections of this chapter dealing with power elevators apply to all types of power elevators except stage and orchestra floors and other elevators of a special character, and dumbwaiters, which are separately treated in the chapter.

79-37. Car and counterweight guide rails shall be of rolled steel, except where steel would constitute an accident hazard, where wood guide rails may be used. The weights of steel guide rails, except for sidewalk type elevators having a travel of not more than fifteen feet, shall be not less than the following:

Maximum permissible total weight of car and load or total weights of counterweights per pair of rails	Minimum weight of each car guide		Minimum weight of each counterweight guide rail	
		With guide rail safeties	without guide rail safeties 1 to 1 Roping	2 to 1 Roping
(Pounds)	(Pounds per foot)		(Pounds per foot)	
4,000	7½	7½	6½	6½
15,000	14	14	7½	7½
27,500	22½	22½	7½	14
40,000	30	30	7½	14

Where seven and one-half pound rails are effectively bracketed or tied at intervals of not more than six feet, the load permitted under the preceding table may be doubled for counterweights with guide rail safeties. Where seven and one-half pound rails are effectively bracketed or tied at intervals of not more than seven feet six inches, the load permitted under the preceding table may be increased to five thousand pounds for cars with guide rail safeties. [Amend. Coun. J. 5-2-40, p. 2417.]

79-38. Guide rails shall be securely fastened with iron or steel brackets, or their equivalent, of such strength, design, and spacing that the deflection of the rails and their fastenings will be not more than one-fourth inch under normal operation. Where the distance between rail supports is more than fourteen feet, the rails shall be suitably backed or bracketed to secure rigidity. Joints of guide rails shall be accurately machined with tongue and groove, or other substantial construction which will maintain true alignment and shall be fitted with fishplates each secured with at least four substantial bolts through each rail. Guide rails and their fastenings shall withstand the application of the safeties when stopping a fully loaded car or the counterweight. Rails shall be extended at the top and bottom to prevent guide shoes running off within the limits of the bottom overtravel and the top clearance. Guide rails for sidewalk type elevators, the top landing of which is not more than four feet above grade shall be arranged to be extended to permit the elevator to rise to the top limit of its travel.

79-39. The maximum weights of car and load, as given in the preceding table for each pair of guide rails shall apply when only one safety device gripping both rails in a horizontal plane is used. When two such safety devices are used on the same guide rail and arranged so that both will be applied at practically the same time and with substantially equal retarding force, the total weight may exceed that shown in the table, but shall in no case, exceed the maximum weight given in the table multiplied by the following factors, based on distance between safeties:

Car Safeties

Distance between safeties	Factor
18 (or over)	2.0
15	1.83
12	1.67
9	1.50
6	1.33
Counterweight Safeties	
15 (or over)	2.0
10	1.67
3	1.33

79-40. Buffers of the spring, oil, or equivalent type shall be installed under the cars of elevators, except sidewalk type elevators having a travel of not more than fifteen feet. [Amend. Coun. J. 5-2-40, p. 2417.]

79-41. Spring buffers or their equivalent may be used with elevators having a rated speed of two hundred feet per minute or less. [Amend. Coun. J. 5-2-40, p. 2417.]

79-42. Oil buffers or their equivalent shall be used with elevators having a rated speed greater than two hundred feet per minute. The minimum total stroke of oil buffer shall be based on an average retardation of thirty-two and two-tenths feet per second per second, based on governor tripping speed. Where precompression is used, the buffer shall be so installed that when the car is level with the terminal landing, the remaining buffer stroke shall not be less than fifty per cent of the gravity stopping distance corresponding to the governor tripping speed used. Where the car or counterweight oil buffer is compressed more than three inches when the car is level with the lower or upper terminal landing, respectively, buffers shall be provided with a switch which will prevent movement of the car in a direction to compress the buffers at a speed greater than one-half the rated speed until the buffers are restored to their normal position. Oil buffers shall be provided with means for gauging the amount of oil in them.

79-43. Buffers similar to those required for cars shall be installed under the counterweights.

79-44. Where structural conditions make it impracticable to provide buffers of the stroke prescribed, speed retarding devices, independent of normal and final stop switches may be provided for retarding car or counterweight, or both, to a definite limiting speed before the buffer is engaged and the stroke reduced but it shall not be less than the distance corresponding to gravity retardation from one hundred twenty per cent of such reduced speed rather than from governor tripping speed, provided that for rated speeds in excess of five hundred feet per minute the buffer stroke shall be not less than eighteen inches. Such speed retarding devices shall be so designed that the retarding force is quickly but gradually applied, substantially constant and the retarding distance is not less than the sliding distance hereinafter prescribed for undercar safeties. [Amend. Coun. J. 5-2-40, p. 2417.]

79-45. Except where precompression is used, buffers shall be located so that under ordinary operating conditions, the car or counterweight does not strike them. [Amend. Coun. J. 5-2-40, p. 2417.]

79-46. Each type and size of oil buffer used shall be approved by the commissioner of buildings after tests hereinafter described made by or under the supervision of a competent recognized testing laboratory. Approved buffers shall be marked by the manufacturer with the range of speed and load for which they have been approved.

79-47. Counterweights shall run in guides and shall be guided at top and bottom of counterweight. If two counterweights run in the same guides the car counterweights shall be above the machine counterweight and there shall be a clearance of not less than eight inches between the counterweights. The cables of the machine counterweight shall be covered or protected by suitable sleeves not less than six inches longer than the car counterweight and firmly attached to the cables. The ends of the sleeves shall be carefully reamed before being placed on the cables. If an independent car counterweight is used it shall not be of sufficient weight to cause undue slackening in any of the cables during acceleration or retardation of the car. Counterweight sections shall be secured by at least two tie rods passing through holes in all the sections, or by other approved means. The tie rods and suspension rods shall have lock nuts and cotter pins at each end. Suspension rods shall be free from welds.

79-48. Elevator cars shall have metal car frames and metal outside frames of platforms and shall be provided with top and bottom guide shoes. Nonmetallic shoes may be used. Where wood platform flooring is used, the underside of car platforms shall be covered with metal not less than No. 27 U. S. gauge, except for sidewalk type elevators the travel of which does not exceed one story.

79-49. The allowable working stresses of rolled steel sections or annealed cast steel in the construction of car frames and platforms, except for elevators of the plunger type, which have no counterweights, based on the static load imposed on them, shall be not more than the values given in the following table for steels meeting the standard specifications of the American Society for Testing Materials, Designation A 7-34, for steel having an ultimate strength of from fifty-five thousand to sixty-five thousand pounds, per square inch for rolled sections or cast steel; and forty-six thousand to fifty-six thousand pounds per square inch, for rivets. For steels of greater strength the allowable working stresses may be increased proportionately, based on ultimate strength.

Passenger Elevators

Loading	Maximum allowable stress (Pounds per sq. in.)	Basis
Tension	10,000	Net area
Bending	10,000	Gross section
Shear on shop rivets	8,000	Net area
Bearing on shop rivets	16,000	Net area
Shear on bolts in clearance holes	7,000	Gross section
Bearing on bolts in clearance holes	14,000	Gross section
Bolts or threaded portions of rods in tension	6,000	Gross section
Compression	11,700-49 L/R	Gross area

Freight Elevators

Tension	12,000	Net area
Bending of car frame member and platform framing at entrance	12,000	Gross section
Bending of platform stringers	15,000	Gross section
Shear on shop rivets	9,500	Net area
Bearing on shop rivets	19,000	Net area
Shear on bolts in clearance holes	8,000	Gross section
Bearing on bolts in clearance holes	16,000	Gross section
Bolts or threaded portions of rods in tension	8,000	Gross section
Compression	14,000-59 L/R	Gross area

L = effective free length of member in inches.
R = least radius of gyration in inches.

79-50. Plunger heads in tension shall be cast steel.

79-51. No cast iron shall be used in the construction of any member of car frame or platform subject to tension, torsion, or bending, except for compensating cable anchorages, releasing carriers, and guide shoe stands.

79-52. When material other than steel is used in the construction of car frames or platforms, the maximum allowable working stresses shall be thirteen per cent of the ultimate strength of the material for passenger elevators, and fifteen and six-tenths per cent for freight elevators.

79-53. When a car is equipped with a car leveling device, the car platform shall be provided with a substantial vertical apron flush with its outer edge extending a sufficient distance below the car floor so that there shall be no horizontal opening into the hatchway while the car is within the landing zone and the hatchway door is fully or partially open.

79-54. A sidewalk type elevator, equipped with a hinged hatch cover, shall be provided with a bow iron not less than seven feet six inches high. A sidewalk type elevator, equipped with a vertical lifting cover shall be provided with stanchions framed together at the upper ends to be of sufficient strength to lift and support the hatch cover. Stanchions shall be provided with suitable buffer springs and shall be of such height as to permit the cover to be completely closed when the car platform is level with the first landing below the grade. Guide shoes for sidewalk type elevators shall be not less than twenty-four inches long unless two sets of shoes are used, and spaced eighteen inches on centers. Where a vertical lift cover is used for a sidewalk type elevator, the vertical distance between the centers of the guide shoes remaining on the guide rails when the car platform is level with the top landing shall be not less than one-third of the height of the hatch cover stanchions. Where single guide shoes, not less than twenty-four inches long are used, six inches of the shoe may be off the rails when the platform is level with the top landing.

79-55. If there is a railroad track on the elevator car, the tops of the rails shall be flush with the car floor.

79-56. Elevator cars, except sidewalk type elevators, shall be equipped with electric lamps which will provide adequate illumination at the landing edge of each car platform. A light socket or receptacle shall be provided under the car platform and on top of the car for inspection purposes, except sidewalk type elevators. For passenger elevators each lighting device provided with a glass or metal shade or reflector, shall have an integral metal base, husk, and spring-clamp holder. If suspended glass bowls or glass plates are used, each such bowl or plate shall rest in, and be fastened to, a metal supporting frame provided with at least three point suspension; glass bowl or plate shall not be drilled for attachment to frame suspensions. Glass bowls, larger than ten inches in diameter, shall be of shatter-proof glass or surrounded by a guard made of wire not less than No. 22 steel wire gauge and of a mesh which will reject a one-half inch diameter ball. Guards shall be securely fastened to the holder or suspension.

79-57. No glass shall be used in any elevator car except to cover certificates, directories, lighting fixtures, and appliances necessary for the operation of the car and as a vision panel in the car door. No piece of glass exceeding one square foot in area shall be used unless it is shatter-proof; no piece of such glass used in the car in connection with lighting fixtures shall exceed four square feet.

79-58. No elevator car shall be constructed with more than one compartment on the same landing level. If an elevator car has upper and lower compartments, each compartment shall be equipped with an operating device. There shall be an operator in each compartment which is in use with exclusive control of that car door or gate and hatchway door and it shall be impossible to start the car unless both operating devices are in the starting position. When any compartment is out of use, its car door or gate shall be locked in the closed position and when so locked the car may be started with the operating device in that compartment in the "off" position. Each compartment shall be equipped with an emergency stop switch and with an emergency release effective for the door or gate of that compartment and the corresponding hatchway door. Each compartment shall be provided with emergency exits as hereinafter prescribed for car enclosures. If impossible to provide the required exits in the sides of the enclosure the upper compartment shall have a trap door in the floor connecting with the top exit of the lower compartment.

79-59. Elevator cars shall not be arranged in such a manner as to counterbalance one another.

79-60. Two single elevators may be used in a single hatchway provided both elevators are equipped with all the safeguards prescribed herein for a single elevator both with relation to each other and to top and bottom terminals.

79-61. The car for every passenger elevator shall be enclosed over the top and at the sides, except the opening necessary for entrance or exit in normal operation.

79-62. The car for every freight elevator shall be enclosed at the sides, except at the opening necessary for loading and unloading. The enclosure, except of a sidewalk type elevator, shall extend to a height of not less than six feet above the platform or to the crosshead if the crosshead is lower. The section of such a car enclosure opposite the counterweight shall extend to the crosshead or car top. The enclosure of a sidewalk type elevator shall extend to a height of not less than six feet above the platform.

79-63. No part of a power elevator car enclosure shall deflect so as to reduce the actual running clearance between cars, counterweights and hatchway enclosures hereinbefore prescribed. The car enclosure shall be secured to the car floor and sling or frame in such a manner that it cannot work loose or become dislodged in ordinary service. Cast iron shall not be used for a car top. The enclosure, including the sides, ceiling and car doors for a passenger and freight elevator, except a sidewalk type elevator, the travel of which does not exceed one story, may be of solid or open work. If of combustible material it shall be covered on the exterior, including the top, with sheet metal not less than No. 27 U. S. standard gauge. Ventilating openings less than seven feet above the car platform shall reject a ball two inches in diameter.

79-64. If an enclosure, except of a sidewalk type elevator, is of open work, it shall reject a ball two inches in diameter at sides of enclosure and one-half inch in ceiling. Where the clearance from any part of the hatchway structure or the counterweight is less than five inches, openings which will pass a ball one-half inch or larger in diameter shall be covered to a height of not less than six feet above the car platform with wire netting with a mesh not larger than one-half inch square made of wire not less than No. 20 steel wire gauge. The enclosure of a sidewalk type elevator, if of open work, shall reject a ball four inches in diameter. If the car enclosure on a freight elevator is cut away to provide access to the hand-rope, the enclosure shall be cut large enough to prevent injury to the operator's hand.

79-65. Every freight elevator car twelve feet or more long and having hatchway openings at only one end shall be provided with a top on the end where the landings occur to a line six feet from the opposite side of the crosshead and the full width of the platform; and every other freight elevator car, except sidewalk type elevators, shall be provided with a top over the entire area of the platform. Top shall be solid or wire grille work having a mesh which will reject a ball one and one-half inches in diameter and made of wire not less than No. 10 steel wire gauge or its equivalent. The top shall be sufficiently strong to sustain a concentrated load of one hundred fifty pounds applied on any four square inches and a distributed load of seventy-five pounds per square foot over any four square foot area except the hinged sections next to the car entrances. Where no car gate is provided, at least the front section of the elevator car top shall be hinged along a line approximately eighteen inches from the edge of the car. A top may be provided on a sidewalk type elevator enclosure only if the clearance between the top and any obstruction above it is at least two feet when the car is at the limit of its top overtravel. [Amend. Coun. J. 5-2-40, p. 2417.]

79-66. Every passenger elevator car shall be provided with an emergency exit. Where there are elevators in adjoining hatchways without an intervening enclosure, the emergency exits may be located in the sides of the adjacent cars directly opposite each other. Where there is no such elevator in an adjoining hatchway, or where it is not practicable to provide the emergency exit in the side of the car, it shall be located in the ceiling of the car. Where the size of the car permits, the emergency exit, if in the side of the car, shall have a clear width of not less than sixteen inches and shall extend from the floor or base to the soffit moulding frame; and in no case shall the clear height be less than three feet. It shall be located so that it is not obstructed by car frame members; and traveling cables and other hatchway equipment shall not be located in front of an exit if such obstruction can be avoided. A side emergency exit panel shall be held securely in place and arranged so that it can be opened from the inside of the car by a key kept in the car and from the outside by a non-removable key. If the car is of the automatic operation type, the side exit panel shall be provided with an electric contact to prevent the operation of the car when the exit panel is open. Where the size of the car platform permits, the emergency exit, if in the ceiling of the car, shall be not less than sixteen inches wide and four hundred square inches in area. A ceiling exit panel shall be held in place in such a manner that the exit cover can be readily opened from both the inside and outside of the car. All equipment and working platform mounted above the top of a car shall be so located as not to obstruct access to or from the emergency exit. If a working platform is placed so as to cover any of the required area of an emergency exit it shall be provided with a trap door, without a catch, opening upward.

79-67. A car door or gate shall be provided at each entrance on both passenger and freight elevator cars, except freight elevators having a type of operation requiring the presence of an operator in the car and handling motor vehicles or hand trucks of over two thousand pounds capacity. Each sidewalk type elevator car, the top hatchway opening of which is located in an area accessible to the public, shall have gates on the sides used for loading or unloading at the grade level, which gates shall extend from the car platform to the top of the enclosure. Car doors or gates for passenger elevators, when closed, shall guard the full height and width of the opening; for freight elevators, when closed, they shall guard the full opening to a height of at least six feet. If a weight is used to close a car door or gate automatically it shall run in metal guides from which it cannot become dislodged, or it shall be enclosed. The bottom of the guides or enclosures shall be so constructed as to retain the weight if the rope breaks. [Amend. Coun. J. 5-2-40, p. 2417.]

79-68. For passenger and freight elevators employing a type of operation not requiring the presence of an operator in the car, power car doors or gates other than those closed by hand shall be driven by a mechanism so designed and set that the force necessary to prevent the closing of the gate on any car shall not be more than thirty pounds, and the kinetic energy of the gate plus all parts connected rigidly thereto, computed for the average closing speed shall not be more than five foot-pounds, except that if the same mechanism also closes the hatchway door, the total kinetic energy may be increased to not more than seven foot-pounds. For automatic operation passenger elevators having power closed, power operated or automatically released self-closing car doors or gates, and manually closed or self-closing hatchway doors, arrangement shall be made so that the door or gate on any car cannot be closed unless the hatchway door is closed.

79-69. Car gates of the scissors or pantograph type, used for passenger elevators shall be of such design that when fully expanded they shall reject a ball of three inches in diameter. For freight elevators, except sidewalk type elevators, such gates when fully expanded shall reject a ball four and one-half inches in diameter. Every car gate shall be of such design and so constructed that it will not deflect beyond the line of the car platform threshold when a force of approximately fifty pounds is applied across two adjacent bars approximately at the center of the bars when the gate is fully extended. Sliding car doors shall be guided top and bottom.

79-70. Hangers for power operated car doors shall be designed to withstand a downward thrust of five times and upward thrust of four times the weight of the door.

79-71. An electric contact shall be provided on every car door or gate which will prevent the operation of the car unless the door or gate is in the closed position. The car door or gate shall be considered in the closed position when the clear open space between the edge of the door or gate and the nearest face of the jamb does not exceed two inches, except that when the car is fitted with a door closer and attended by an operator and the hatchway door is fitted with a door closer, this distance can be increased to four inches. The car door or gate electric contact shall permit the operation of the car when the emergency release is in use or when the car is being moved by a leveling device. An automatic operation elevator may be operated with an open gate if there is no person in the car. Freight elevator cars operating in hatchways outside a structure, which are enclosed only at the ground landing shall be protected on the exposed side or sides by independently operated gates equipped with electric contacts. The car door or gate contact shall be designed so that it is positively opened by a lever or other device attached to and operated by the door or gate. The functioning of a car door or gate contact to prevent the movement of the car shall be independent of the action of a spring or springs in tension, and of the closing of an electric circuit. If springs are used they shall be in compression. If an electric circuit is used, its interruption shall prevent the movement of the car. [Amend. Coun. J. 5-2-40, p. 2417.]

79-72. Each type and make of car door and gate contact shall be tested and approved by the commissioner of buildings on the basis of "endurance test," "current interruption test," "test in moist atmosphere," "misalignment test," and "insulation test" hereinafter described, made by or under the supervision of a competent recognized testing laboratory. Approved contacts shall be suitably marked for identification.

79-73. Except sidewalk type elevators, an emergency release shall be installed in each car which is arranged for operation through a car switch by an operator in the car, including dual operated elevators, and which is equipped with a gate or door, by which an operator can operate the elevator from within the car independent of the position of the car door or gate. This emergency release shall be independent from the emergency release installed on the hatchway doors. The emergency release in dual operated elevators shall be arranged so as to be inoperative when the car is operated as an automatic elevator. [Amend. Coun. J. 5-2-40, p. 2417.]

79-74. Every elevator car suspended by cables shall be provided with a car safety or safeties capable of stopping and sustaining the car with rated load, attached to the car frame, except sidewalk type elevators not inside of a building and having a travel of not over twenty feet. When one safety is used, it shall be located beneath the car frame.

The application of the safety or safeties shall not cause the car platform to become out of level more than one-half inch per foot measured in any direction. When the car safety or safeties are applied, no decrease in the tension of the governor cable or motion of the car in the descending direction shall release the car safety or safeties. No car safeties which depend for application upon the completion or maintenance of an electric circuit shall be used. Car safeties shall be applied mechanically. The gripping surfaces of car or counterweight safeties shall not be used to guide the car or counterweights. Pawls and ratchets alone shall not be used as safety devices. Counterweight safeties shall be capable of stopping and sustaining the weight of the counterweight. The application of counterweight safeties shall not cause the counterweight frame to become out of level more than one-half inch per foot in any direction. When a counterweight safety is applied, no decrease in the tension of the governor cable or motion of the counterweight in the descending direction shall release the counterweight safety. Jaws and other parts of car and counterweight safeties of the sliding type shall be made of forged steel of an ultimate strength of not less than fifty-five thousand pounds per square inch, and cast steel of an ultimate strength of not less than sixty-five thousand pounds per square inch, in which case they may in action be stressed to seventeen thousand pounds per square inch. If steels of greater strength are used, the allowable stress may be increased proportionately, based on ultimate strength.

79-75. Car safeties shall be operated by speed governors, except that instantaneous safeties of the broken rope type may be used, (1) for private residence passenger elevators; (2) for sidewalk type elevators not inside of a building and having a travel of not over twenty feet; and (3) freight elevators inside of a building having a travel of not more than fifteen feet, a maximum platform area of fifty square feet and a maximum speed of fifty feet per minute. Instantaneous safeties of the governor controlled type may be used on elevators having a rated speed of not more than one hundred feet per minute provided that the elevator speed is not more than one hundred ten feet per minute on the up travel with rated load in the car. On overspeed such safeties shall be applied by the governor. On the parting of the hoisting cables such safeties shall apply instantly and independently of the speed action of the governors. Car safeties shall not be installed for stopping ascending cars. If an ascending car is to be stopped on account of overspeed, a safety shall be applied to the counterweights for this purpose. The car safety may be permitted to stop the ascending car above the top terminal landing, provided the retardation of the ascending car under such conditions is within thirty-two and two-tenths feet per second. The governor may open the motor circuit and apply the brake in case of overspeed in the up direction. The governor shall be located where it cannot be struck by the car in case of overtravel and where there is sufficient space for the full movement of governor parts. For elevators having a rated speed of four hundred seventy-five feet per minute, or more, the pull-out of the governor cable from the normal running position until the safety jaws begin to apply pressure to the guide rails shall be not more than thirty inches. The car speed governor shall be set to cause the application of the safety at a speed not less than fifteen per cent nor more than forty per cent above the rated speed, except that no governor shall be required to trip at a car speed less than one hundred seventy-five feet per minute. For rated speed exceeding five hundred feet and not exceeding seven hundred feet per minute the maximum governor tripping speed shall be thirty-three and one-third per cent above rated speed and for rated speed exceeding seven hundred feet per minute, twenty-five per cent above rated speed. A governor for the operation of a counterweight safety shall comply with the requirements for a governor used with a car safety of the same type, except that it shall be adjusted to trip at a speed not more than ten per cent in excess of the tripping speed of the car governor. A single governor may operate car and counterweight safety, but the counterweight safety must be tripped at a speed ten per cent in excess of the tripping speed of the car governor. Broken rope safeties of the instantaneous type may be used on counterweights within the limits of the following:

Rated speed (Feet per minute)	Total weight of counterweight (Pounds)
250	2,000
200	3,000
160	4,000
125	5,000

[Amend. Coun. J. 5-2-40, p. 2417.]

79-76. Safeties shall be of the following types:

Type 1. Instantaneous.

Type W. C. Wedge clamp with constant retarding force.

Type G. W. C. Gradual wedge clamp with gradually increasing retarding force.

Type F. G. C. Flexible guide clamp with constant retarding force. Each safety shall be marked for identification with letters "I", "W.C.", "G.W.C.", or "F.G.C.", depending on whether it is type 1, 2, 3, or 4. The distance between the safety jaws shall be not less than the thickness of the guide rail plus three thirty-seconds inch and the jaws shall not drag against the rail.

79-77. Where governor controlled safeties are used, the motor control circuit and the brake control circuit shall be opened before or at the time the governor trips by a switch located on the governor or car safety device. Governor cables shall be of iron, steel, monel metal, or phosphor bronze. The cable shall be at least three-eighths inch in diameter. Tiller rope construction shall not be used for governor cables. The portion of the cable wound on the safety drum shall be of corrosion resisting metal. Governor ropes shall run clear of governor jaws during the normal operation of the elevator. The size, material, and construction of the governor rope, together with the proper tripping speed of the governor, shall be stamped on the governor stand or stated on a brass name plate attached to it in letters at least one-fourth inch in height. The arc of contact between the governor rope and its driving sheave shall, in conjunction with a tension device, provide sufficient traction to cause proper operation of the governor. The design and length of governor jaws shall be such that no serious cutting, tearing, or deformation of the rope shall result from the operation of the safety. The governor shall so function that the safety rope will pull through the governor jaws on the application of a stress exceeding that required to operate the safety so as to stop the car, except in the case of instantaneous type safeties. Governors shall have a protective covering over sheave and exposed gears. Winding drum machines shall be provided with a slack-cable device which will cut off the power and stop the elevator machine if the car is obstructed in its descent. Slack-cable switches shall be so constructed that they will not automatically reset when the slack in the cable is removed.

79-78. Safeties shall be marked by the manufacturers with the range of weight and speed for which they are designed; such weight shall include the complete car structure, the safety, the rated load in the car, and all moving equipment, the weight of which is borne by the safety.

79-79. Replacements of governor cables on elevators installed after July 20, 1938, shall be of the size, material, and construction stamped on the governor stand or name plate. Replacements of governor cables on elevators installed prior to July 20, 1938, shall be of the material and design required by this code and of the size and construction required by the governor, except that in cases where the present governors, if in satisfactory condition, will not permit the use of iron, steel, monel metal, or phosphor bronze cables, the existing type of cables may be used.

79-80. The rated load of a passenger elevator in pounds shall be not less than the following:

Maximum Horizontal Free Area Inside of Car

(Square feet)			Rated Load (Pounds)
Up to		5.0	310
5.0	to	6.0	380
6.0	to	7.0	450
7.0	to	8.0	520
8.0	to	9.0	590
9.0	to	10.0	650
10.0	to	11.0	740
11.0	to	12.0	820
12.0	to	13.0	900
13.0	to	14.0	980
14.0	to	15.0	1050
15.0	to	17.0	1250
17.0	to	20.0	1500
20.0	to	23.5	1750

23.5	to	26.5	2000
26.5	to	29.0	2250
29.0	to	32.0	2500
32.0	to	34.0	2700
34.0	to	37.0	3000
37.0	to	39.0	3250
39.0	to	42.0	3500
42.0	to	46.5	4000
46.5	to	51.0	4500
51.0	to	56.0	5000
56.0	to	60.5	5500
60.5	to	65.0	6000
65.0	to	70.0	6500
70.0	to	74.5	7000
74.5	to	79.0	7500
79.0	to	84.0	8000
84.0	to	93.0	9000
93.0	to	102.0	10000
102.0	to	111.0	11000
111.0	to	120.0	12000

The rated load of a freight elevator is the load to be carried at rated speed. The elevator may carry a heavier load at lower speed if all parts are designed for the heavier load.

79-81. A metal plate bearing (1) the weight of the complete car including the safeties, (2) the rated capacity in pounds and the rated speed in feet per minute at which the car is designed to travel, and (3) the cable data prescribed hereinafter, shall be placed on the crosshead of passenger and freight elevators and on the bow iron or other conspicuous place of sidewalk type elevators. The capacity of freight elevators shall be indicated in a conspicuous place in the car in letters and figures at least one inch high by the word "CAPACITY," followed by figures giving the rated load in pounds.

79-82. Passenger and freight elevators, if designed for carrying safes or other one piece loads greater than the rated load of the elevator, shall be provided with the following features:

(a) A locking device so designed that it will hold the car at any landing independently of the hoisting cables while the safe or other object is being loaded or unloaded, and that it cannot be unlocked unless the entire weight of the car and load is suspended on the cables. The wrench or other device for operating the locking device shall be removable. The locking device shall be designed to withdraw the bars should it come in contact with the landing locks if the car is operated on the "up" motion.

(b) A metal plate in the elevator car bearing the words "Capacity Lifting Safes" in letters followed by figures giving the capacity in pounds for lifting safes for which the machine is designed. The letters and figures shall be at least one-fourth inch high, stamped, etched, or raised on the surface of the plate.

(c) A car platform, car frame, sheaves, shafts, cables, guide rails, and locking device designed for the specified "Capacity Lifting Safes" with a factor of safety of at least five.

(d) Car safeties designed to stop and hold the specified "Capacity Lifting Safes" with the aid of the cables and counterweights.

(e) A machine designed to operate with the "Capacity Lifting Safes" at low speed and the car safety designed to stop and hold the specified "Capacity Lifting Safes" independently of the cables where the space under the hatchway is used for any purpose.

(f) Additional counterweights added for traction machines so that the total overbalance is at least equal to forty-five per cent of the "Capacity Lifting Safes."

(g) The locking device hereinbefore prescribed shall be provided for any passenger elevator installed for carrying safes or other one piece loads where the weight of such safes or one piece load equals or exceeds seventy-five per cent of the rated load.

(h) The maximum "Capacity Lifting Safes" of any traction elevator shall be one and one-third times the rated load of the elevator.

(i) Elevator machines equipped for carrying safes or other concentrated loads greater than the rated load of the elevators shall be provided with special switches for operating the cars under such conditions.

79-83. Passengers may be carried on freight elevators installed after July 20, 1938, provided the elevators comply in all respects with the requirements herein prescribed for passenger elevators. Passengers may be carried in freight elevators installed prior to July 20, 1938, subject to the restrictions for new freight elevators, provided the elevators comply in all respects with the rules for passenger elevators installed prior to July 20, 1938.

79-84. Drums and leading sheaves shall be of cast iron or steel and shall have finished grooves which may be faced with materials other than iron and steel having sufficient traction. U grooves shall be not more than one-sixteenth inch larger than the cables. Hoisting rope sheaves for traction machines shall have sheave grooves designed so that the traction will not be decreased materially by the wear of the grooves. The diameter of sheaves or drums for hoisting or counterweight cables for private residence elevators shall be at least thirty times the diameter of the cables. For other elevators the diameters of sheaves or drums for hoisting or counterweight cables shall be at least forty times the diameter of the cables, except for sidewalk type elevators; provided, however, that where structural conditions make this impracticable, the diameter of sheaves or drums may be reduced to not less than thirty times the diameter of the cables. Openings in drums shall be drilled at an angle of less than forty-five degrees with the run of the ropes and be provided with a rounded corner with a radius at least equal to that of the ropes. [Amend. Coun. J. 5-2-40, p. 2417.]

79-85. The factors of safety based on the static loads including the rated loads plus the weight of the car, cables, counterweights, and other appurtenances to be used in the design of any elevator hoisting machine shall be not less than eight for wrought iron or wrought steel and ten for cast iron, cast steel, or other materials.

79-86. Keys shall be used for fastenings except that set screws may be used where the connection is not subject to torque. No friction gearing or clutch mechanism shall be used for connecting the drums or sheaves to the main driving gear. No elevator machines shall be belt or chain-driven nor shall any worm gearing with cast iron teeth be used.

79-87. Winding drum and traction machines shall be equipped with brakes applied automatically by springs or gravity when the operative device is at the "stop" position. Electric elevator machines shall be equipped with electrically released brakes. Brakes shall be of such design that they cannot be released before power has been applied to the motor. The brake construction shall be such that no single ground short-circuit or counter-voltage will prevent the setting of the brake during normal operation, and no motor field discharge, counter-voltage, single ground, or accidental short-circuit will retard its setting during emergency stops.

79-88. Hydraulic elevator machines shall be so constructed that the piston will be stopped before the car can be drawn into the overhead work. Stops of ample strength shall be provided to bring the piston to rest when under full pressure without causing damage to the cylinder or cylinder head. Traveling sheaves for vertical hydraulic elevators shall be guided. Guide rails and guide shoes shall be of metal. Side frames of traveling sheaves for vertical hydraulic elevators shall be either structural or forged steel. The construction commonly known as the "U-strap connection" between the piston rods and the traveling sheaves shall not be used. Where more than one piston rod is used on the vertical pulling type hydraulic elevators, an equalizing crosshead shall be provided for attaching the rods to the traveling sheave frame to insure an equal distribution of load on each rod. Equalizing or cup washers shall be used under the piston rod nuts to insure a true bearing. Cylinders of elevator machines shall be provided with means for releasing air or other gas. Piston rods of tension type hydraulic elevators shall have a factor of safety of at least eight based on the cross-sectional area at the root of the thread. A true bearing shall be maintained under the nuts at both ends of the piston rods to prevent eccentric loading on the rods. Automatic stop valves shall be packed with cup leathers, or other means shall be used to prevent sticking of the valve stems. In the design of a plunger elevator, provision shall be made to stop both the plunger and the car.

79-89. Each pump connected to the pressure tank of a hydraulic elevator shall be equipped with one or more relief valves piped to discharge into the discharge tank or the pump suction and so installed that they cannot be shut off. The relief valve, or valves, shall be of sufficient size and so set as to pass the full capacity of the pump at full speed without exceeding the safe working pressure of the pump or tank. Elevator pumps, unless equipped with pressure regulators which control the motive power, shall be equipped with automatic by-passes.

79-90. Pressure tanks shall be made and tested in accordance with the requirements prescribed in chapter 84 of this code for steam boilers and unfired pressure vessels. Each pressure tank shall be provided with a water gauge glass having brass fittings and valves attached directly to the tank and so located as to show the level of the water when the tank is more than half filled. Each pressure tank shall have a pressure gauge which correctly indicates pressure to not less than one hundred fifty per cent of the normal working pressure allowed in the tank; this gauge shall be connected by a corrosion resisting pipe equipped with an indicating shut-off cock. Each pressure tank shall be provided with a one-fourth inch pipe size valved connection for attaching an inspector's gauge while the tank is in service. Any pressure tank that may be subject to vacuum shall be provided with one or more vacuum relief valves having openings of sufficient size to prevent the collapse of the tank if a vacuum occurs. Outlets of pressure tanks shall be so located as to prevent the probability of the entrance of air or other gas into the elevator cylinder. Pressure tanks shall be so located and supported that inspection may be made of the entire exterior.

79-91. Discharge tanks of hydraulic elevators, open to the atmosphere, shall be so designed that when completely filled the factor of safety shall be at least four based on the ultimate strength of the material. Each discharge tank shall be provided with a cover and with a suitable vent to the atmosphere.

79-92. Each elevator shall be provided with upper and lower terminal normal stopping devices arranged to stop the car automatically from any speed attained in normal operation within the top and bottom overtravel independent of the operating device inside the car, the final terminal stopping device and the buffers; except that in the case of a hand-rope or rod operating device the normal terminal stopping device may operate in conjunction with the operating device.

79-93. Normal terminal stopping devices shall be installed as follows:

(a) *Winding drum machines.* Each electric elevator having a winding drum machine, except a sidewalk type elevator, and except an elevator operated by a hand-rope, wheel, or lever device, shall have stopping switches on the car or in the hatchway operated by the movement of the car. Each electric elevator having a winding drum machine, with a lever or wheel operating device shall have a device to center the operating device automatically.

(b) *Traction machines.* Each electric elevator having a traction machine, except an elevator operated by a hand-rope device, shall have stopping switches on the car or in the machine room, or in the hatchway, operated by the movement of the car. When located in the machine room, the stopping contacts shall be mounted on and operated by a stopping device mechanically connected to the car and designed so that it is not dependent on friction as a driving means. An automatic safety switch shall be provided which will stop the car if the means for mechanically connecting the stopping device to the car should fail.

(c) *Hand-ropes or rods.* Each electric elevator with a hand-rope or rod operating device shall have stop balls securely fastened to the rope or rod arranged to center the operating device, and, except for a sidewalk type elevator, if a winding drum machine is used it shall also have an additional device to center the operating device automatically.

(d) *Hydraulic elevators.* Each hydraulic elevator having a rated speed of more than one hundred feet per minute shall have an automatic stop valve independent of the normal control valve or valves operated either by the car or the machine. Each hydraulic elevator, having a rated speed of not more than one hundred feet per minute, with a hand-rope or rod operating device, shall have stop balls on the operating device.

(e) *Sidewalk type elevators.* Each electric sidewalk type elevator having a winding drum machine and hand-rope or pull chain operating device shall have a stopping device on the machine and on the operating device. Each electric sidewalk type elevator having a winding drum machine and either automatic or continuous pressure operation shall have a stopping device on the machine and in the hatchway. These stopping devices shall not control the same switches unless two or more separate and independent switches are provided, two of which shall be closed to complete the motor and brake circuit in each direction of travel.

79-94. Each electric elevator, except a sidewalk type elevator, shall be provided with upper and lower final terminal stopping devices arranged to stop the car and counterweight automatically from rated speed within the top clearance and bottom overtravel independently of the operation of the normal terminal stopping devices and the operating device in the car, but with buffers operative. Final limit switches and oil buffers shall be located so that the engagement of the buffer and the opening of the limit switch will occur as nearly simultaneously as possible. When spring buffers are provided, the final limit switches shall be opened before the buffer is engaged. Where means are provided to prevent jumping of the car or counterweight it shall only be necessary that the limit switch open before the buffer is fully compressed. Final terminal stopping devices shall be installed in connection with electric elevators, except sidewalk type elevators, as follows:

Winding drum machines. Each electric elevator, having a winding drum machine, shall have stopping switches on the machine and also in the hatchway operated by the movement of the car.

Traction machines. Each electric elevator having a traction machine shall have stopping switches in the hatchway operated by the movement of the car.

79-95. Final terminal stopping devices shall act to prevent movement of the car in both directions. The normal and final terminal stopping devices shall not control the same switches on the controller unless two or more separate and independent switches are provided, two of which shall be closed to complete the motor and brake circuit in each direction of travel. When 2-phase or 3-phase alternating current is used to operate the elevator the above switches shall be of the multiple type. In the case of hand-rope, rod, wheel, or lever operating devices the normal and final terminal stopping devices may control the same switch on the controller. When the final terminal stopping device controls the same controller switch, or switches, as the operating device or the normal terminal stopping device, it shall be connected into the control circuit on the opposite side of the line. No chain, rope, or belt-driven machine terminal stopping device shall be used on elevators having winding drum machines. Each electric elevator having a winding drum machine, driven by 2-phase or 3-phase alternating current, shall have an automatic terminal stopping device mounted on the machine or in the hatchway operated by a cam attached to the elevator car except where a direct current brake is used and a direct current main line or potential switch. This stopping device shall be arranged to open the main line circuit to the motor and brake directly. This device shall prevent the movement of the machine in either direction before or coincident with the operation of the final terminal stopping device.

79-96. The contacts of all terminal stopping devices shall be directly opened mechanically without the use of springs or gravity, or both. Normal and final terminal stopping switches unless located in the machine room shall be of the enclosed type. Normal and final terminal stopping devices, where on the car or in the hatchway, shall be securely mounted in such a manner that the movement of the switch lever or roller to open the contacts shall be as nearly as possible at right angles to a line drawn between the car guide rails. The cams for operating the terminal stopping switches shall be of metal and shall be so located and of sufficient length to maintain the switch in the open position when the car is in contact with the overhead structure or resting on the fully compressed buffer with the overhead structure and the buffer in their normal position. Each electric elevator, equipped with a floor controller, or other similar device for automatic stops at landings, need be provided with only one set of stopping contacts for the terminal floors, provided these contacts and the means of operating them comply with the following:

Metal contacts. If metal to metal contacts, either gravity or spring opened, or a combination of these are used, there shall be at least two independent breaks.

Mechanically opened. If contacts are directly opened mechanically.

Circuit interrupted. If breaking of the circuit to stop the car is independent of the operation of springs in tension or the completion of another electric current.

79-97. No elevator having a rated speed of more than one hundred feet per minute shall be operated by direct hand operated ropes, cables, or rods. No elevator having a rated speed of more than one hundred fifty feet per minute shall be operated by wheel or lever mechanism except hydraulic elevators. Each hydraulic elevator, operated by a wheel operating device, shall be provided with an indicating device in the car to show the position of the control valve. Such device shall be marked to indicate "up," "down" and "off."

79-98. No elevator shall be operated by a rope or cable which is accessible from the outside of the hatchway. Overhead tension weights for hand-ropes shall be secured by chains or cables attached to the weights and to a suitable anchorage. When hand-ropes are used, guards shall be provided which will keep the hand-ropes on the sheaves. Each freight elevator, except sidewalk type elevator, operated by means of a direct operated hand-rope, shall be provided with a centering device which will insure the operating mechanism being placed in the stop position when it is desired to stop the car; it shall also be provided with rope locks to hold the car at any landing. [Amend. Coun. J. 5-2-40, p. 2417.]

79-99. The handle of car switch operating devices and the switch operating devices used with continuous pressure operation, except push button, shall be arranged to return to and lock automatically in the stop position when the hand of the operator is removed. Where more than one operating device is used in a car, except in automatic operation elevators, the operating devices shall be so interlocked that only one can be used at a time. If a single operating device is used, it shall be located near the car opening, or if for more than one opening, near the car opening serving the greatest number of landing openings. An emergency stop-switch, which will cut off the source of power, shall be provided in the car adjacent to the operating device for each electric elevator. If the stop button of an automatic operation or continuous pressure operation elevator is a red button marked "stop," it may be used as an emergency stop-switch. One lead to the emergency stop-switch shall run to the car through a separate and independent traveling cable where electric elevators have winding drum machines. [Amend. Coun. J. 5-2-40, p. 2417.]

79-100. A manually operated multi-pole disconnecting service switch shall be installed in the main line of electric elevator machines and motor generator sets. This switch shall be located adjacent to and visible from the elevator machine or motor generator set. It shall be so arranged that the disconnecting switch cannot be closed from any other part of the building.

79-101. Where metal to metal contacts, gravity or spring opened, or a combination of the two, are used on controller switches for stopping elevator machines, there shall be at least two independent brakes. Breaking the circuit to stop an automatic control elevator at the terminals shall be independent of the operation of springs in tension or the completion of any other electric circuit. If springs are used they shall be in compression. If an electric circuit is used, its interruption shall prevent the movement of the car. The frame of an electric elevator machine, the frame of the controller, the operating rope if used, and the frames of electric appliances in or on the elevator car shall be effectively grounded. Electric slack cable switches shall be enclosed. No control system shall be used which depends on the completion or maintenance of an electric circuit for the interruption of the power and for the application of electromechanical brakes at the terminals, for the operation of safeties or the closing of a contact or by an emergency stop button, except for dynamic braking and speed control devices.

79-102. Car switching and hand-operating levers shall be so arranged that the movement of the lever toward the opening which the operator usually faces will cause the car to descend and the movement of the lever away from the opening will cause the car to ascend. On a mechanically operated passenger elevator, the operation of directional switches or operating valves shall not depend solely upon bolts or upon cast or malleable iron chains. If a handrope is used, the cable shall be securely anchored to the operating sheave or drum. No circuit breaker operated automatically by a fire alarm system shall be used to cut off the power, or to interrupt the operating circuit of a power elevator. [Amend. Coun. J. 5-2-40, p. 2417.]

79-103. An automatic operation elevator, except a sidewalk type elevator the travel of which does not exceed one story, shall comply with the following requirements:

(a) *Non-reversing.* If the car has started for a given landing it shall be impossible for an impulse to be given from any landing to send the car in the reverse direction until it has reached the destination corresponding to the first impulse.

(b) *Continuity of direction.* If the car has been stopped at an intermediate landing and is to continue in the direction determined by the first impulse, the car may be started by closing the door or car gate.

(c) *Hatchway door locks.* It shall be impossible to start the car under normal operation unless every hatchway door is closed and locked in the closed position. No devices employing locks and contacts of a type where the contact is made when the door is closed and the locking of the door takes place subsequently shall be used, except as hereinbefore provided.

(d) *No sending buttons.* Where the elevator is used by the general public, no buttons shall be provided at any landing to send the car to any other landing.

(e) *Floating platform.* The floating platform construction may be used to permit operation of the car from the landing buttons with the car gate open when there is no passenger in the car if: (1), each landing floor is flush with the hatchway edge of its landing threshold and lintel within a tolerance of one-fourth inch, plus or minus; (2), the platform will prevent the operation of the car from the car push buttons unless the platform is depressed; (3), it is impossible to operate the elevator from the car push buttons unless the car gate is closed; (4), the platform will operate when a weight of thirty pounds is placed on it at any point; (5), the platform is so constructed that there is no pocket or recess capable of holding refuse or dirt beneath the platform; and, (6), the entire platform within the enclosure and the platform threshold sill will float. No handrails shall be provided in the elevator car.

(f) *Inspector's switch.* An inspector's switch shall be installed on the machine controller to render all landing buttons inoperative and when the opening of the emergency stop switch or button does not cancel all registered car and hall calls, the inspector's switch on the controller shall also render all car buttons inoperative, and there shall be furnished on the car an "Up" and "Down" inspection switch or button which will enable the inspector to operate the elevator in either direction as long as the switch or button is held in contact. [Amend. Coun. J. 5-2-40, p. 2417.]

79-104. Continuous pressure operation shall not be used for a passenger elevator except when it is provided with all of the safety devices required for an automatic operation elevator.

79-105. Each electric elevator driven by a polyphase alternating current motor shall be provided with a device which will, except in the case of an alternating current motor used in a motor generator set, prevent starting the motor if the phase rotation is in the wrong direction, or if there is a failure in any phase.

79-106. Each electric elevator operated by a hand cable, lever, or wheel operating device, shall be so arranged that in case of failure of power, or the opening of a car gate, landing door or limit switch, it will be necessary to return the operating device to the "OFF" position before the elevator can again be started.

79-107. If an overload circuit-breaker is used for a direct current rheostatic control electric elevator, the wiring shall be arranged so that the circuit of the brake magnet coil is opened at the same time that the line circuit is opened.

79-108. Each sidewalk type elevator, the hatch opening of which is located in area accessible to the public, shall be provided with a device which normally will prevent the car from opening or closing the hatch cover. A switch which can be operated only by a special key and which when closed will permit the car to open and close the hatch cover shall be installed at an easily accessible point above grade level and adjacent to the elevator. It shall be so arranged that it is necessary to hold the key or button manually in position to keep the circuit closed. The installation may be so made that the elevator will be operated by the key switch or button.

79-109. No condensers, the operation or failure of which will hold in any magnet, or keep alive any circuit so as to interfere with the proper operation of any elevator apparatus, shall be installed in connection with any elevators after July 20, 1938. All such condensers installed in connection with any elevators prior to July 20, 1938, shall be removed.

79-110. The maximum rated speed of passenger freight elevators, except as otherwise prescribed herein, shall be limited only by the top and bottom clearances in the hatchway. The maximum rated speed of freight elevators without a regular operator, except sidewalk type elevators, unless provided with automatic operation or continuous pressure operation, shall be one hundred feet per minute. The maximum rated speed of electric freight elevators with continuous pressure operation, except sidewalk type elevators, shall be one hundred fifty feet per minute.

79-111. Car and counterweight cables shall be of iron or steel without covering except that where liability to excessive corrosion or other hazard exists, marline covered cables may be used for freight elevators only. Chains shall not be used for hoisting, except for sidewalk type elevators the travel of which does not exceed twenty feet.

79-112. The capacity plates hereinbefore prescribed shall bear the following legend with blanks filled in:

For Winding Drum Machines.

Cable Specifications.

Cable	Number	Diameter in inches	Rated ultimate strength in pounds
Hoisting	....	....	....
Car Counterweights	....	....	....
Machine Counterweights	....	....	....

For Traction Machines and Drum Machines
Without Counterweights.

Cable Specifications.			
Cable	Number	Diameter in inches	Rated ultimate strength in pounds
Hoisting Cables	....	....	....

For Hydraulic Machines.

Cable Specifications.			
Cable	Number	Diameter in inches	Rated ultimate strength in pounds
Hoisting Car	....	....	....
Counterweights	....	....	....

In addition, a metal tag stating the diameter, rated ultimate strength, material of the cable, and the date of the cable installation shall be attached to the cable fastenings.

79-113. The factor of safety based on static loads for car and counterweight cables for elevators shall be not less than the following, corresponding to the rated speed of the car:

Car speed (Feet per minute)		Factor of safety
Passenger elevators	Freight elevators	
	50	6.6
	100	7.0
	150	7.4
50	200	7.7
100	250	8.0
150	300	8.2
	350	8.4
200	400	8.6
250	450	8.8
	500	9.0
300	550	9.25
350	600	9.5
	650	9.6
400	700	9.75
	750	9.9
450	800	10.0
500	900	10.2
	1000	10.3
550	1100	10.4
	1200	10.5
600		10.7
650		10.9
700		11.0
750		11.1
800		11.2
900		11.4
1000		11.5
1100		11.6
1200		11.7

The factor of safety based on static loads used for hoisting chains and cables of sidewalk type elevators shall be not less than five for chains and seven for cables.

79-114. The number and diameter of the cables shall be determined by using the required factor of safety and the rated ultimate strength of the cable. The computed load on the cables shall be the weight of the car, plus its rated load, plus the weight of hoisting cables and the compensation. The minimum number of cables used with traction elevators shall be three. The minimum number of cables used with winding drum elevators and for private residence elevators shall be two. No hoisting ropes for elevators shall be less than one-half inch in diameter, except for private residence elevators where ropes may be reduced to not less than three-eighths inch.

79-115. Cables anchored to winding drums shall have not less than one complete turn of each cable on the winding drum when the car or counterweight has reached the extreme limit of its overtravel. No car or counterweight cables shall be repaired or lengthened by splicing. The winding drum ends of car or counterweight cables shall be secured by clamps on the inside of the drums or by one of the methods hereinafter described for fastening cables to cars or counterweights. The car and counterweight ends of cables shall be fastened by individual tapered babbitted sockets. Other fastenings may be used for compensating counterweight cables and for plunger elevators. Adjustable shackle rods shall be used to attach cables to cars and counterweights in such a manner that all portions of each cable, except the portion in the socket, shall be readily visible.

79-116. The length of a babbitted socket shall be at least four and seventy-five hundredths times the diameter of the cable. The hole at the small end shall be not more than one-sixteenth inch larger in diameter than the actual cable diameter for cables having a nominal diameter from one-fourth to seven-sixteenths inch; three thirty-seconds inch larger for cables having a nominal diameter of one-half inch to three-fourths inch; one-eighth inch larger for cables having a nominal diameter of seven-eighths inch to one and one-eighth inch and three-sixteenths inch larger for cables having a nominal diameter of one and one-fourth inches to one and one-half inches. The small end of the socket shall be free from cutting edges. The hole at the large end of the socket shall be at least two and one-fourth times the diameter of the cable. A socket shall be drop forged steel or steel casting. The socket shall be of such strength that the cable will break before the socket is appreciably deformed. [Amend. Coun. J. 5-2-40, p. 2417.]

79-117. The ends of wire rope shall be served with three seizings at each side of any point at which the rope is to be cut. Only annealed iron wire shall be used as seizing wire. The wires shall be wound tight and even. The twisted ends of the seizing shall be so placed that they fall into the valley between strands and away from the center of the rope. For five-eighths inch and smaller cables, the first two seizings shall be at least one-half inch long and the third seizing at least three-fourths inch long; for larger cables, seizings shall be increased accordingly. The first seizing shall be close to the cut and the second seizing shall be spaced within two and one-fourth inches from the first seizing. The third seizing shall be at a distance from the second seizing equal to the length of the socket. Tape shall not be used for annealed iron wire seizing. The ropes thus served shall be slipped into the socket a sufficient distance for manipulating and after removing the first two seizings the strands shall be opened up and the hemp center cut out as close as possible to the remaining seizing. All grease shall be wiped off the extended strands and the lubricant carefully removed by washing with gasoline. The ends of the strands shall then be bent in and bunched close together, and the rope pulled back as far as possible so that the strands rest in the basket with the third seizing slightly projecting outside the mouth of the socket. The socket shall be warmed and shall be held vertical and truly axial with the rope to be socketed. Tape or waste may be wound around the rope at the base of the socket to prevent the metal from seeping through, but must be removed after the babbitt has cooled off. Pure babbitt only, free of dross, shall be used, heated to a temperature just sufficient to produce fluidity. The seizing and socketing shall be done so that there will be no loss of rope lay. [Amend. Coun. J. 5-2-40, p. 2417.]

79-118. Each automatic operation passenger or freight elevator, except a sidewalk type elevator the travel of which is not more than twenty feet, shall be provided with an audible emergency signal operative from the car and located outside of the hatchway or shall be provided with a telephone. The emergency alarm shall be clearly audible in a room in which an employe is ordinarily located. Each automatically operated elevator installed in a private residence shall be provided with a telephone permanently connected to a central exchange. The hatchway of each freight elevator, except automatic operation, continuous pressure operation, and sidewalk type elevators, shall be provided with a signal system by means of which signals can be given from any landing whenever the elevator is desired at that landing.

Stage, Orchestra, and Other Elevators of Special Character

79-119. Stage and orchestra elevators and other elevators of special character, shall comply with all of the foregoing requirements for elevators, which are applicable to the type of equipment used and for the purpose for which the elevator is installed; also all additional parts and accessories necessary for their full operation.

Hand Elevators

79-120. In hand elevators the clearance between a car platform and the landing threshold shall be not more than two inches for passanger elevators and three and three-fourths inches for freight elevators, except that where the operating rope is located at the side of the platform, this clearance shall not exceed one inch. An overtravel of not less than eighteen inches shall be provided at the top for hand elevators. except for sidewalk type elevators. No overtravel is required at the bottom. Machinery and sheaves shall be so supported and held as to prevent any part from becoming displaced. The supporting beams shall be of steel or reinforced concrete. No elevator machinery except idler or deflecting sheaves with their guards or frames and devices for limiting and retarding the car speed and their accessories shall be hung underneath the supporting beams at the top of the hatchway.

79-121. Means shall be provided in hand elevators to prevent hangers for all sliding hatchway doors from jumping the tracks. Stops shall also be provided to prevent the hanger carriage from leaving the ends of the track, or suitable stops may be provided on the door only. Door counterweights shall run in metal guides from which they cannot become dislodged, or shall be boxed in. The bottoms of the guides or boxes shall be so constructed as to retain the counterweight if the counterweight rope breaks.

79-122. Cars of hand elevators, except for sidewalk type elevators, shall be enclosed on the top and sides not used for entrance. Enclosures shall be of solid or openwork rigidly braced with steel. Where slats, bars, or wire mesh are used, the openings shall reject a ball two inches in diameter. Where sheet metal is used, it shall be not less than No. 16 U. S. standard gauge. Where wire mesh is used, the wire shall be not less than No. 10 steel wire gauge. A car enclosure shall not deflect more than one-fourth inch when a force of seventy-five pounds is applied perpendicularly to the enclosure at any point. The car enclosure shall be securely fastened to the car platform or frame so that it cannot work loose or become displaced in ordinary service. Cars for sidewalk type elevators shall be enclosed on the sides not used for entrance to a height of not less than four feet or to the spring of the bow iron, if higher. If the enclosure is openwork of bars, slats, or wire mesh the openings shall reject a ball four inches in diameter. Wire mesh enclosures shall be of wire not less than No. 13 steel wire gauge. Hand elevator cars upon which persons are permitted to ride shall have only one compartment.

79-123. Car frames and platform hand elevators shall be of metal or sound seasoned wood designed with a factor of safety of at least four for metal or six for wood on the rated load uniformly distributed. The frame members shall be securely bolted or braced.

79-124. No glass shall be used in an elevator car except to cover the certificate, directory, light fixtures, and appliances necessary for the operation of the car. No piece of glass over one square foot in area shall be used unless it is shatterproof; the total area of such glass used in the car in connection with lighting fixtures, whether in one or more pieces, shall not exceed four square feet.

79-125. Hand elevator cars, operating in hatchways outside of structures, which are enclosed only at the grade landing, shall be protected on the exposed sides by independently operated gates or by self-closing gates.

79-126. If the rise of an elevator exceeds fifteen feet it shall be equipped with an approved safety device attached to the underside of the car which will immediately stop and hold the car and rated load if the suspension means breaks.

79-127. The rated load of a hand passenger elevator shall be not less than fifty pounds per square foot of maximum clear horizontal area inside of the car enclosure. A metal plate bearing (1), the rated capacity of the elevator in pounds and (2), if a passenger elevator, the maximum number of passengers to be carried, based on one hundred fifty pounds per person, in letters or figures not less than one-fourth inch high, etched or raised on the surface of the plate shall be fastened in a conspicuous place in the elevator car.

79-128. Car and counterweight guide rails for hand elevators shall be of rolled steel except where steel would constitute an accident hazard, where wood guide rails may be used, and except further, that wood guide rails may be used where the car travel is not more than thirty-five feet. Joints in steel rails shall be either tongued and grooved or doweled and fitted with splice plates. Joints in wood rails shall be tongued and grooved or doweled and screwed to backing pieces or brackets. Guide rails shall be securely fastened with through bolts, wood screws, or clips of such strength, design, and spacing that the maximum deflection of the guide rails and their fastenings will be not more than one-fourth inch under normal operation. Guide rails, and their fastenings, shall withstand the application of the safety when stopping a fully loaded car or the counterweight. The guiding surfaces of the guide rails for elevators requiring safeties shall be finished smooth. Guide rails shall be bottomed on suitable supports and extended at the top to prevent guide shoes running off in case the overtravel is exceeded.

79-129. Car buffers of the spring type or their equivalent shall be installed in the pits of hand passenger elevators.

79-130. Counterweights of hand elevators shall run in guides; they shall not be boxed unless incombustible material is used. Sections of counterweights for hand passenger elevators, whether carried in frames or otherwise, shall be secured by at least two tie rods passing through holes in the sections. The tie rods shall have lock nuts at each end, secured by cotter pins.

79-131. Automatic brakes shall be provided on all hand elevators having a travel of thirty-five feet or more. Hand brakes operating in both directions of motion or combined automatic brakes and speed retarders operating in both directions of motion, except when motive power is derived through use of a self-locking or non-overhauling worm gear drive, shall be provided on all other elevators.

79-132. The factors of safety, based on the static loads to be used in designing parts of hoisting machines shall be not less than eight for wrought iron or wrought steel and ten for cast iron or other materials. Keys or pins shall be used for fastenings except that set screws may be used where the connection is not subject to torque. No sheaves or idlers in cast iron stirrups shall be suspended from the underside of the supporting beams. No hand elevator machine shall be equipped with any means or attachment for supplying any other power, unless such elevator is permanently and completely converted into a power elevator complying with the requirements for power elevators. No rope gripping attachments or clutch mechanisms shall be used as a means of applying power to hand elevators.

79-133. A metal tag shall be attached to the suspension fastenings stating the size, rated ultimate strength, and material of the suspension and the date of its installation. The number of suspension members for both car and counterweight shall be at least two. Suspension members shall be of iron, steel, or marline covered, and shall be installed in the manner hereinbefore prescribed for power elevators. The factor of safety used in determining the size of the suspension member shall be at least five, based on the weight of the car and its rated load. Suspension members shall be so adjusted that either the car or the counterweight shall be bottomed before the counterweight or the car strikes any part of the overhead structure. Suspension members secured to a winding drum shall have not less than one complete turn of the suspension member on the winding drum when the car or counterweight has reached the extreme limit of its overtravel. The drum end of cables shall be secured by clamps or sockets inside the drum.

Dumbwaiters

79-134. Machinery and sheaves shall be supported and held as to prevent any part from becoming displaced.

79-135. Hatchway doors for a power dumbwaiter shall be equipped with electric contacts and locks which will prevent the operation of the machine while any hatchway door is open and prevent the opening of a door unless the car is at a landing.

79-136. Dumbwaiter cars shall be of such strength and stiffness that they will not deform appreciably if the load leans or falls against the sides of the car. Cars shall be made of wood or metal, reinforced at the point of suspension. Metal cars, if sectional, shall be rigidly riveted, welded, or bolted together. Dumbwaiter cars, machines, and suspension means shall at least be capable of sustaining the rated load.

79-137. Cars shall be constructed to carry their rated loads with a factor of safety of not less than six. Cars having a total clear platform area, including shelves, if any, of four square feet or more, shall be capable of sustaining not less than the loads given in the following table, but the motive power need not be sufficient to raise the structural capacity load:

(Square feet)	Structural capacity loads (Pounds)
4.0	100
5.0	150
6.25	300
9.0	500

A metal plate bearing the name of the manufacturer and the rated load shall be placed in a conspicuous place in each dumbwaiter car and on its machine. [Amend. Coun. J. 5-2-40, p. 2417.]

79-138. Dumbwaiter machines shall be securely fastened to their supports. The factors of safety, based upon the ultimate strength of the material, and the rated load plus the weight of the car, suspension means, counterweights, and similar apparatus used in the design of dumbwaiter machines shall be not less than six for steel and nine for cast iron or other materials. Keys or pins shall be used for fastenings except that set screws may be used where the connection is not subject to torque. Sheaves or idlers shall not be suspended in cast iron stirrups from the underside of supporting beams.

79-139. Guides shall be of wood or metal, except that metal guides shall be used where the rated speed is more than one hundred feet per minute unless the use of steel would constitute an accident hazard, in which case wood may be used. Guides shall be rigidly secured to the hatchway. Joints in metal guides shall be either tongued or grooved or doweled and fitted with splice plates. Joints in wood guides shall be either tongued and grooved or doweled and screwed to backing pieces or brackets. One set of guides may be used for both the car and counterweight.

79-140. Counterweights for hand dumbwaiters and for power dumbwaiters with a rated load of not more than one hundred pounds and a rated speed of not more than one hundred feet per minute, if sectional, shall be carried in suitable frames. Counterweight sections for power dumbwaiters, having a capacity of more than one hundred pounds or a speed of more than one hundred feet per minute, shall be secured by not less than two tie rods passing through holes in all sections, unless suitable counterweight frames or boxes are provided. The tie rods shall have lock nuts at each end; the lock nuts shall be secured by cotter pins.

79-141. Suspension means for hand dumbwaiters may be of hemp. Suspension means for power dumbwaiters shall be of metal and where exposed to corrosion shall be provided with suitable protective covering. Suspension means for a dumbwaiter may consist of a single number. The minimum factor of safety of suspension means for hand dumbwaiters shall be five. The minimum factor of safety of the suspension means for power dumbwaiters shall be not less than the following:

Factor of Safety for Suspension Means for
Power Dumbwaiters.

Rated speed (Feet per minute)	Factor of safety (Except for tapes)
Up to 50	5.0
Over 50 to 75	5.2
75 to 100	5.3
100 to 150	5.4
150 to 200	5.6
200 to 250	5.8
250 to 300	6.05
300 to 350	6.3
350 to 400	6.55
400 to 450	6.8
450 to 500	7.0
500 to 550	7.25
550	7.50

Add twenty-five per cent to the above minimum factors of safety for tapes. The number and size of the suspension means shall be determined by using the required factor of safety and the rated ultimate strength of the suspension means. The computed load on the suspension means shall be the sum of all suspended weights plus the rated load. No suspension means shall be repaired or lengthened by splicing. The winding drum ends of the car and counterweight suspension means shall be secured by clamps or sockets inside the winding drum. Suspension means secured to a winding drum shall have not less than one turn on the winding drum when the car or counterweight has reached the extreme limit of its over-travel.

79-142. The maximum speed for power dumbwaiters controlled by hand ropes shall be fifty feet per minute. Guards which will keep the ropes on the sheaves shall be installed unless means are used to maintain the hand ropes in proper tension automatically. Power dumbwaiters, except hydraulic dumbwaiters, shall be equipped with brakes which are automatically applied when the power is cut off the motor. A power dumbwaiter having a travel of more than thirty feet, a capacity of more than one hundred pounds, and operated by a winding drum machine, except a hydraulic dumbwaiter, shall be provided with a slack cable device which will cut off the power and stop the machine if the car is obstructed in its descent. Each power dumbwaiter shall be provided with means independent of manual operation to stop the car automatically at each terminal within the limits of over-travel.

Escalators

79-143. The maximum angle of inclination of an escalator shall be thirty degrees from the horizontal in new buildings and thirty-three degrees in existing buildings. The width of an escalator shall be not less than twenty-four inches nor more than forty-eight inches measured between the balustrading at a vertical height of twenty-four inches above the nose line of the treads. All escalators shall have a horizontal tread formation. The maximum speed of an escalator, measured along the angle of inclination, shall be one hundred twenty-five feet per minute, except that if the line of entrance and exit is not in the vertical plane of travel, the maximum speed shall be one hundred feet per minute. [Amend. Coun. J. 5-2-40, p. 2417.]

79-144. Every escalator shall be provided on each side with solid balustrading. On the escalator side the balustrading shall be smooth without depressed or raised paneling or molding, and without glass panels. There shall be no abrupt changes in the width of the balustrading; should any change be necessary it shall be not more than eight per cent of the greatest width and shall be made at an angle of not more than fifteen degrees from the line of escalator travel. Each balustrading shall be equipped with a handrail moving at the same speed and in the same direction as the travel of the escalator.

79-145. Escalator treads and landings shall be of material affording secure foothold. If the landing is of concrete it shall have edge insertions of metal, wood, or other material to prevent slipping. The track arrangement shall be designed to prevent the displacement of the treads and running gear if a tread chain breaks.

79-146. The rated load in pounds on an escalator shall be four and six-tenths times the width of the escalator in inches times the horizontal projected length of the exposed treads in feet. The factor of safety to be used in the design of an escalator truss or girder shall be not less than five based on the static loads. The escalator truss or girder shall be so designed that it will safely retain the steps and running gear in case of failure of the track system to retain the running gear in its guides. Chains shall have a factor of safety of not less than ten except where the chain is composed of cast steel links thoroughly annealed, when the factor of safety shall be not less than twenty. Access to the interior of the escalator shall be provided for inspection and maintenance.

79-147. Escalators shall be driven by individual electric motors.

79-148. Each escalator shall be marked by the manufacturer with the rated load and speed for which that size and type has been tested and approved in accordance with "escalator tests" hereinafter described.

79-149. An emergency stop button or other type of switch accessible to the public shall be conspicuously located at the top and bottom of each escalator landing. The operation of either of these buttons or switches shall cause the interruption of power to the escalator. It shall be impossible to start an escalator by means of these buttons or switches. The buttons or switches shall be marked "ESCALATOR STOP BUTTON" or "ESCALATOR STOP SWITCH." Where starting buttons or switches are accessible to the public they shall be either of the key operated type or enclosed in a box provided with a lock and key. Each escalator shall be equipped with means to cause the interruption of power to the escalator in case of accidental reversal of travel of an escalator operating in the ascending direction.

79-150. Each escalator shall be provided with a speed governor which will cause the interruption of power to the escalator in case the speed exceeds a predetermined value which shall be not more than forty per cent in excess of the normal running speed. Each escalator shall be provided with a broken chain device which will cause the interruption of power to the escalator in case a tread chain breaks. Where an escalator is equipped with a tightening device, operating by means of tension weights, provision shall be made to retain these weights in the escalator truss in case the weights should fall.

79-151. Each escalator shall be provided with an electrically released and mechanically applied safety brake of sufficient power to stop the fully loaded escalator mounted on the main drive shaft of the escalator. This brake shall automatically stop the escalator when operating, or tending to operate, in the descending direction in case any of the safety devices function, except that if the escalator drive machine is equipped with an electrically released mechanically applied brake of sufficient power to stop the fully loaded escalator, the above safety devices may apply this brake in lieu of the safety brake, if a device is furnished which will apply the safety brake in case the connection between the escalator drive machine and the main drive shaft parts.

79-152. [Repealed Coun. J. 5-2-40, p. 2417.]

Tests of Interlocks Before Approval

79-153. Hatchway door interlock devices shall be examined with respect to their proper performance of the prescribed functions at temperatures from twenty-five to one hundred forty degrees Fahrenheit. Where the functioning of any such device might be affected by change of temperature, and coefficients of thermal expansion of the affected parts are known or measured, the effect of temperature may be computed and tests need not be carried out at more than one temperature. For interlocks employing a single switch operated by wire or tape to protect several hatchway doors, the switch shall be marked with the physical properties of the wire or tape used, and the certificate of approval shall cover the allowable maximum length of tape or wire of a given material which may be used with the device. During tests for (c) endurance, (d) current interruption, (e) in moist atmosphere and (f) without lubrication, interlocks shall have electrical parts connected in a non-inductive electric circuit having a constant resistance, in which a current of two amperes from a source of two hundred twenty volts direct current is flowing. During tests (c), (e) and (f), the electrical circuit shall be closed but shall not be broken at the contact within the device on each cycle of operation.

79-154. A separate device shall be used in each test described in the following sections as "endurance test," "tests in moist atmosphere," and "tests without lubrication."

If an electric contact which has been approved as a part of a door interlock or as a door or gate electric contact is submitted for test as part of another interlock, the electrical tests need not be repeated. Retiring cams or equivalent devices for operating interlocks need not be tested. [Amend. Coun. J. 5-2-40, p. 2417.]

79-155. The interlock device with initial lubrication and adjustment only, shall complete one hundred thousand cycles of operation without failure of any kind and without evident indications of approaching failure. If an interlocking device is not a complete and separate unit for each hatchway door, but includes any part which is common to the interlock operation of more than one hatchway door, that portion of the device which functions on every unlocking operation shall complete four hundred thousand additional cycles of operation without failure of any kind and without evident indication of approaching failure. [Amend. Coun. J. 5-2-40, p. 2417.]

79-156. One thousand cycles of operation shall be performed by the device used in the "endurance test," while making and breaking the circuit within the device.

79-157. Preliminary to this test, the device shall be given a wearing-in run of ten thousand cycles of operation fully lubricated. The interlocking device, except self-lubricating bearings, and bearings of a type not requiring frequent replenishment of lubricant, shall be taken apart and freed of lubricant by washing in gasoline. The device, after reassembling, shall be subjected continuously in a closed hatchway to an atmosphere saturated with a three and one-half per cent solution of sodium chloride for seventy-two consecutive hours being operated for only ten consecutive cycles at the end of each of the first two twenty-four hour periods and allowed to stand exposed to the air for an additional twenty-four hours, and shall not fail in a manner to create an unsafe condition. After having been lubricated it shall then, without adjustment and without further attention, complete fifteen thousand cycles of operation without failure of any kind.

79-158. Preliminary to this test the device shall be given a wearing-in run of ten thousand cycles of operation fully lubricated. The interlocking device shall then be taken apart and all bearings, except self-lubricating bearings and bearings of a type not requiring frequent replenishment of lubricant shall be freed of lubricant by washing in gasoline, and after reassembling without other attention than the usual initial adjustment, that is, without adjustment especially made to meet the conditions of this particular test, and without further attention, shall complete twenty-five thousand cycles of operation without failure of any kind or without evident indication of approaching failure.

79-159. The device shall operate successfully when the car, cam, or other equivalent operating device, used in making the test, has been displaced horizontally from its normal position, successively as follows:

(a) In a direction perpendicular to the edge of the landing—backward one-fourth inch; forward one-fourth inch.

(b) In a direction parallel with the edge of the landing—to the right one-fourth inch; to the left one-fourth inch. For horizontal sliding doors the device shall operate successfully.

(c) When the bottom of the hatchway door has been displaced horizontally from its normal position in a direction perpendicular to the edge of the landing—backward one-fourth inch; forward one-fourth inch.

(d) When the top of the hatchway door has been displaced horizontally from its normal position in a direction perpendicular to the edge of the landing—backward one-eighth inch; forward one-eighth inch.

79-160. Insulation of electrical parts shall be tested with a sixty cycle effective voltage twice the rated voltage plus one thousand volts applied for one minute.

79-161. If the interlock is of the type which is released by a car cam, before and after the "endurance test," the force required to release the interlock and the movement of the element engaged by the cam, shall be measured. The force recorded in each case shall be the maximum, acting in a horizontal plane, which must be applied to that member of the interlock which is directly actuated by the cam to release the door locking member of the interlock from locking engagement. The movement recorded shall in each case be the distance vertically projected on a horizontal plane, which the member of the interlock directly actuated by the cam travels from its position when the cam is retired and the door locked to its position when the door locking member is first released from locking engagement. The car cam used to actuate any particular interlock shall exert a force at least double the average force, and shall have a movement at least one-half inch in excess of the average movement, as given in the test certificate for that interlock. The force and movement readings shall be determined with the interlock mounted in its normal position, as determined by the manufacturer. The test certificate shall state the average of the recorded forces and movements. [Amend. Coun. J. 5-2-40, p. 2417.]

Tests of Buffers Before Approval

79-162. Each type and size of oil buffer shall be subjected to the test described in the following sections dealing therewith.

79-163. The buffer shall be installed upon a suitable foundation so that the axis of the cylinder is vertical. It shall be filled with oil provided by the manufacturer. An elevator car of suitable size shall be dropped from two different heights, as specified below, freely in its guides, upon the buffer. The travel of the car shall be recorded accurately by means of a drum chronograph or by photographing a carefully calibrated tape. The error in the time readings by either method shall not exceed 0.005 second. From the time-travel curve the velocity and the retardation of the car shall be computed and plats made of the car travel, car velocity, and car retardations. Original test data shall be available to the manufacturer. No retardation peak having a duration greater than one twenty-fifth second shall exceed two and one-half times gravity, eighty and five-tenths feet per second per second for tests A-1 and A-2 and B-1 and B-2. Results of A-3 and B-3 shall be recorded for the purpose of examination to detect any abnormal performance. Upon completion of these tests no part of the buffer shall show any deformation or injury.

Schedule of Drops

Test drop in inches (bottom of car to striker or top of buffer).	Total load in pounds (weight of car plus loading).
(A) S (such a distance that the maximum velocity attained by the car during the buffer compression shall be equal to the governor tripping speed for which the buffer is rated).	1. Manufacturer's rated minimum. 2. Manufacturer's rated maximum. 3. One hundred ten per cent manufacturer's rated maximum.

(B) Buffer stroke	
under twenty-four (24) inches .... .51S	1. Manufacturer's rated minimum.
twenty-four (24) to thirty (30) inches .... .56S	2. Manufacturer's rated maximum.
exceeding thirty (30) inches .... .64S	3. One hundred ten per cent manufacturer's rated maximum.

[Amend. Coun. J. 5-2-40, p. 2417.]

79-164. The oil leakage test shall be made simultaneously with the above retardation tests. The oil level in the buffer, when filled prior to tests, shall be carefully marked. At the completion of the six drops, three different loads at each of two speeds, in each of which the car shall have remained on the fully compressed buffer for a period of five minutes, the buffer shall be allowed to stand one-half hour in the fully extended position to permit the return of oil to the reservoir and to permit the escape of any entrained air, after which the oil level shall again be measured. The oil level at the completion of these tests shall not show any drop, and shall in no case be more than one-sixteenth inch lower than the level at the start of the test for each foot of buffer stroke. [Amend. Coun. J. 5-2-40, p. 2417.]

79-165. In the churning test, the time of the buffer stroke after the car has dropped a distance equivalent to the stroke of the buffer shall be determined either from the chronograph or photographic record or by means of an automatic timer. Any automatic timing device shall be accurate, having the minimum possible lag, and be capable of being read to 0.01 seconds. The car shall then be run on to the buffer with cables attached at approximately one-half the velocity used in test B at intervals of one minute until ten such strokes have been made. The oil shall then be examined for foam. No oil foam shall appear on the outside of the buffer following this test. Upon completion of the ten strokes at one-half speed another free-fall equivalent to the buffer stroke shall be made immediately and the time of the stroke taken. The time of this second free-fall test shall be at least seventy-five per cent of that of the drop test made prior to the churning.

79-166. When the load is lifted, the buffer shall return to the fully extended position within ninety seconds. In case of sticking the manufacturer shall submit either a duplicate buffer or a new pressure cylinder and piston upon which equipment a second test shall be run. If sticking again results, the buffer shall be rejected. [Amend. Coun. J. 5-2-40, p. 2417.]

79-167. With the buffer casing clamped or otherwise securely fastened to a firm base, the lateral movement of the top of the plunger shall be accurately measured, the plunger head being moved from its extreme right to the extreme left in a vertical plane. This total movement shall be divided by two to determine the movement from the vertical position. The maximum permissible movement from the vertical shall be one-sixteenth inch per foot of buffer stroke.

Field Tests of Elevators

79-168. A test shall be made of every new elevator with rated load in the car and the brakes, limit switches, buffers, safeties and speed governor shall be caused to function. Field tests of buffers and car safeties shall be made as provided in the following sections dealing therewith.

79-169. Run on to buffers with rated load at rated speed with final limit switches operative, except that if buffer stroke has been reduced due to the use of a speed retarding device the car or counterweight shall be run on the buffer at the speed corresponding to the buffer stroke used.

79-170. An overspeed test with rated load in the car shall be made of the safeties, except that governor controlled instantaneous type safeties shall be tested at rated speed, the governor being tripped by hand, and broken rope instantaneous type safeties shall be tested by obtaining the necessary slack rope to cause them to function. For wedge clamp, gradual wedge clamp, and flexible guide clamp safeties, this test shall be made to determine whether the safety will operate within the allowable limits of the maximum and minimum stopping distances. Overspeed tests shall be made with cables attached and all electric apparatus operative, except for the overspeed contact on the governor. For alternating current elevators, where the rated load is unable to bring about overspeed, the safety governor shall be tripped by hand at maximum obtainable speed. No test of the safeties with safe lifting load in the car is required. [Amend. Coun. J. 5-2-40, p. 2417.]

79-171. The maximum and minimum stopping distances of car and counterweight safeties of the wedge clamp type shall be within the limits given in the following table:

Maximum and Minimum Stopping Distances at Various Governor Tripping Speeds at Runaway Test—Wedge Clamp Type Safeties

Governor tripping speed (feet per minute)	Maximum stopping distance (feet) for car with rated load and for counterweight	Minimum stopping distance (feet) for car with rated 150-lb. load	Minimum stopping distance (feet) for car with rated load and for counterweight
300	2.0	1.0	1.3
400	2.8	1.2	1.6
500	4.0	1.4	2.0
600	5.2	1.6	2.4
700	6.8	1.9	3.0
800	8.6	2.3	3.6
900	10.7	2.7	4.4
1000	13.0	3.0	5.2
1200	18.4	4.0	7.0
1500	28.2	5.7	10.4

[Amend. Coun. J. 5-2-40, p. 2417.]

79-172. The maximum and minimum stopping distances of car and counterweight safeties of the gradual wedge clamp type shall be within the limits given in the following table:

Maximum and Minimum Stopping Distances at Various Governor Tripping Speeds at Runaway Test—Gradual Wedge Clamp Type Safeties

Governor tripping speed (feet per minute)	Maximum stopping distance (feet) for car with rated load and for counterweight	Minimum stopping distance (feet) for car with 150-lb. load	Minimum stopping distance (feet) for car with rated load and for counterweight
300	7.0	1.5	2.2
400	7.8	1.6	2.5
500	8.6	1.8	2.8
600	9.9	2.1	3.3
700	11.0	2.4	3.8
800	12.2	2.7	4.5
900	13.5	3.0	5.2
1000	14.6	3.5	6.1
1200	17.3	4.5	8.0
1500	21.2	6.2	11.2

[Amend. Coun. J. 5-2-40, p. 2417.]

79-173. The maximum and minimum stopping distances of the car and counterweight safeties of the flexible guide clamp type shall be within the limits given in the following table:

Maximum and Minimum Stopping Distances at Various Governor Tripping Speeds at Runaway Tests—Flexible Guide Clamp Type Safeties

Governor tripping speed (feet per minute)	Maximum stopping distance (feet) for car with rated load and for counterweight	Minimum stopping distance (feet) for car with 150-lb. load	Minimum stopping distance (feet) for car with rated load and for counterweight
300	1.6	.6	.8
400	2.5	.8	1.2
500	3.6	1.0	1.5
600	4.8	1.2	2.0
700	6.4	1.5	2.6
800	8.2	1.8	3.2
900	10.4	2.2	4.0
1000	12.8	2.6	4.8
1200	18.0	3.5	6.7
1500	28.0	5.2	10.0

[Amend. Coun. J. 5-2-40, p. 2417.]

79-174. Stopping distance is actual slide as indicated by the marks on the rails. For elevators having a rated speed of four hundred and seventy-five feet per minute, or more, the pull-out of the governor cable from its normal running position until the safety jaws begin to apply pressure to the guide rails shall be not more than thirty inches.

Field Tests of Escalators

79-175. Each escalator shall be subjected to the tests set forth in the following sections dealing therewith, without load.

79-176. The application of the over-speed safety device shall be obtained by causing the escalator to travel at the governor tripping speed. With escalators driven by alternating current motors, the governor may be tripped by hand with the escalator traveling at its normal rate of speed.

79-177. The accidental reversal device prescribed shall be made to function by manually operating, or attempting to operate, the escalator in the reverse direction.

79-178. The application of the broken chain device shall be obtained by operating the device by hand.

79-179. Tests of escalator emergency stop buttons or switches shall be made to determine whether they function properly. Where the device which applies the safety brake, in case the connection between the escalator drive machine and the main drive shaft fails, is required, it shall be tested by operating the device by hand.

Other Tests of Equipment

79-180. A test shall be made of every new dumbwaiter with rated load in the car and the brake and all other safety devices shall be caused to function.

79-181. Electric door and gate contacts shall be subjected to the "endurance test," "current interruption test," "tests in moist atmosphere," "mis-alignment test," and "insulation test" hereinbefore described for interlocks.

79-182. Emergency releases shall be subjected to the "insulation test" hereinbefore described for interlocks.

Mechanical Amusement Devices

79-183. All mechanical amusement devices shall be built of the material hereinafter enumerated, or of other materials approved by the commissioner of buildings, substantially constructed and designed to withstand shocks and to afford adequate protection for passengers riding thereon; structural features shall meet the requirements prescribed elsewhere in this code. Handrails, handles, safety straps, or other protective devices of suitable design shall be provided in all cars of roller coasters, scenic railways, ferris wheels, whips, and other riding, sliding, rotating, and rolling devices of similar type. Each horse on a merry-go-round shall be equipped with a stirrup and a bridle, also a strap on the horse rod to snap or buckle under the arms of the rider.

79-184. No device shall extend more than three feet below the ground level unless the sides and bottoms of all pits are built of concrete; all pits shall be provided in the bottom with drains connected to the sewers. If pits are too deep to drain to the sewer by gravity, a syphon, automatic electric pump, or other device shall be installed in the drain connection. The structure shall be of wood, steel, or other serviceable material substantially fabricated and braced; no permanent structure more than thirty-five feet in height shall be of wood. In an amusement device of the dip type, the up grade in each dip shall be so constructed that the cars will run up the structure at a speed such that the cars will run over the top of the next dip without having a tendency to raise the passengers out of their seats or throw them out of the cars. The cars shall be of substantial construction; they shall be equipped with dogs to drop into a sprocket chain or other approved device to pull the car or train to the starting point of its travel. Ferris wheels, except of the portable type, shall have steel frames and steel tripods supported upon, and anchored to concrete piers. Cars shall be of all steel construction or of wood reinforced with steel. Ferris wheels of portable type used in carnivals and under similar conditions, shall be of steel construction set on suitable bases under the towers and the side tripods.

79-185. Every device shall be provided with a terminal brake; if designed for more than two car trains, it shall also be provided with an emergency brake, release of which will immediately stop the train, which shall be placed in some level spot on the structure; or, if approved by the commissioner of buildings, on one of the curves. The emergency brake shall be under the control of the brakeman or other attendant at the loading platform. Each car shall also be equipped with a safety device arranged to catch and hold the train at any point on the road should the chain break or any other accident occur to the machinery while a car or train is in transit.

79-186. All mechanical amusement devices shall be provided with electric lighting if they are to be in use after sunset.

79-187. A test shall be made of every new mechanical amusement device and all safety devices shall be caused to function.

Violation of Chapter Provisions

79-188. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 79.1

WARM AIR HEATING PLANTS

79.1- 1. Definitions
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79.1-1. The following terms are defined for the purpose of this chapter as follows:

A "gravity warm air heating plant" shall consist of one or more warm air furnaces, enclosed within casings, together with necessary appurtenances thereto, consisting of warm air pipes and fittings, cold air or recirculating pipes, ducts, boxes and fittings, smoke pipes and fittings, registers, borders, faces and grilles, the same intended for the heating of buildings, in which they may be installed.

A "forced warm air heating plant" shall consist of one or more warm air furnaces, enclosed within casings, together with necessary appurtenances thereto, consisting of warm air pipes and fittings, cold air or recirculating pipes, ducts, boxes and fittings, smoke pipes and fittings, registers, faces and grilles, fans or other mechanical means of moving or forcing warm air, the same intended for the heating of buildings in which they may be installed.

"New buildings" shall mean buildings which have not been and are not inhabited.

"Buildings already constructed" shall mean completed buildings which have been or are inhabited. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-2. The provisions of this chapter shall be held to be the minimum requirements adopted for the protection of health, welfare, sanitation and the safety of the community and for the protection of the ultimate purchaser or user of the heating plant. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-3. The following provisions shall be complied with in any building wherein a warm air heating plant is or is to be installed:

(a) Buildings Under Construction.

(1) Where warm air register boxes, heads, pipes or stacks are to be installed, joists shall be set not less than sixteen inches (16″) on centers and shall be butted and not lapped. Studding shall be set directly over and under joists, leaving a space of not less than fourteen inches (14″) between studs and joists. Wherever joists are cut, headers must be put in to support joists, in all buildings having studded exterior walls, the floors shall be extended to the outside sheathing and all spaces between studding shall be closed at the attic floor line.

(2) All partition walls (or sections of these walls) in which heat stacks to second or third floor rooms are to be installed, shall be of sufficient size to accommodate stacks required to heat said rooms.

(3) In new construction, it shall be unlawful for anyone to do any cutting of woodwork for the reception of the wall stacks or baseboard registers except the general contractor or the contractor in charge of the work for him, or some experienced carpenter working under him. Where it is necessary to cut joists or supporting members, headers shall be put in and braced so as not to weaken the structure.

(b) Buildings Already Constructed.

(1) It shall not be necessary to remove the plaster and lath from the walls where the new stacks are to be run, provided that stacks have proper capacity for connecting basement pipe and can be securely fastened together and shoved in either from above or below.

(2) On buildings already constructed, it shall be lawful for the heating contractor to do any cutting necessary for the reception of all appurtenances in the installation of a gravity warm air heating plant, except when it is necessary to cut joist or supporting members the work shall be done by an experienced carpenter and headers shall be put in and braced so as not to weaken the structure.

(3) Otherwise, installation of new work in buildings already constructed shall, in general, conform to the provisions of this chapter. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-4. (a) Method for Determining Sizes of Basement Warm Air Pipes.

Rule A.

Each First Floor Room.
Divide square feet of glass by 12.
Divide square feet of net outside wall by 60, (See Table A).
Divide cubic contents by 800.
Add together the above and multiply by 9.
For Forced Air add together the above, and multiply by 5.
The result is the area of the basement pipe.
The sum of:

$$\left.\begin{array}{lrr}\text{Glass (sq. ft.)} & \text{(Par. 5G)} \div & 12 \\ \text{Net wall (sq. ft.)} & \text{(Par. 6G)} \div & 60 \\ \text{Cubic Contents} & \div & 800\end{array}\right\} \times 9 = \begin{array}{l}\text{Area of} \\ \text{Basm't} \\ \text{Pipe}\end{array}$$

And for forced air the sum of:

$$\left.\begin{array}{lrr}\text{Glass (sq. ft.)} & \text{(Par. 5C)} \div & 12 \\ \text{Net wall (sq. ft.)} & \text{(Par. 6C)} \div & 60 \\ \text{Cubic Contents} & \div & 800\end{array}\right\} \times 5 = \begin{array}{l}\text{Area of} \\ \text{Basm't} \\ \text{Pipe}\end{array}$$

Rule B.

Each Second Floor Room.
Divide square feet of glass by 12.
Divide square feet of net outside wall by 60, (See Table A).
Divide cubic contents by 800.
Add together the above and multiply by 6.
For Forced Air add together and multiply by 5.
The result is the area of the basement pipe.
The sum of:

$$\left.\begin{array}{lrr}\text{Glass (sq. ft.)} & \text{(Par. 5G} \div & 12 \\ \text{Net wall (sq. ft.)} & \text{(Par. 6G} \div & 60 \\ \text{Cubic Contents} & \div & 800\end{array}\right\} \times 6 = \begin{array}{l}\text{Area of} \\ \text{Basm't} \\ \text{Pipe}\end{array}$$

And for Forced Air the sum of:

$$\left.\begin{array}{lrr}\text{Glass (sq. ft.)} & \text{(Par. 5C)} \div & 12 \\ \text{Net wall (sq. ft.)} & \text{(Par. 6C)} \div & 60 \\ \text{Cubic Contents} & \div & 800\end{array}\right\} \times 5 = \begin{array}{l}\text{Area of} \\ \text{Basm't} \\ \text{Pipe}\end{array}$$

Rule C.

Each Third Floor Room.
Divide square feet of glass by 12.
Divide square feet of net outside wall by 60, (See Table A).
Divide cubic contents by 800.
Add together the above and multiply by 5.
The result is the area of the basement pipe.

The sum of:

$$\left.\begin{array}{llr} \text{Glass (sq. ft.)} & \text{(Par. 5C)} & \div\ 12 \\ \text{Net wall (sq. ft.)} & \text{(Par. 6C)} & \div\ 60 \\ \text{Cubic Contents} & & \div\ 800 \end{array}\right\} \times 5 = \begin{array}{l} \text{Area of} \\ \text{Basm't} \\ \text{Pipe} \end{array}$$

(b) Basis of Working Rules for Pipes.

These formulae are for 70 degrees temperature difference (outside temperature zero, inside temperature 70 degrees Fahrenheit). When temperature difference is more than 70 degrees, add 1½ per cent per degree to final figures. When temperature difference is less than 70 degrees, deduct 1½ per cent per degree from final figures.

The values as given in Table A for use in the working rules, section 79.1-4, Rules A, B and C are derived as follows:

Example.

The factor 60 in Table A, Item No. 1, is based upon a co-efficient of heat transmission of 0.23 B. t. u. per square foot per degree difference per hour, thus:

$W \times 0.23 \times 70 \div 111 =$ sq. in. first floor leader to compensate for the heat loss through walls only. In this, $W =$ net area of exposed wall in sq. ft.; $0.23 =$ co-efficient of transmission in B. t. u. per sq. ft. per degree difference per hr; $70 =$ difference in temperature of air on inside and outside of wall; $111 =$ heat delivering capacity of 1 sq. in. of first floor leader pipe for a register temperature of 175° F. Reduced to its simplest approximate form this is

$$\frac{W \times 9}{60}$$

Likewise substitute 167 for second floor and 200 for third floor in place of 111.

The values in Table A for the different types of walls were obtained by substitution of proper co-efficient of heat transmission instead of 0.23 in the above formula.

Table A.

The factor 60 used in section 79.1-4, Rules A, B and C, is for buildings constructed as hereinafter set forth in Item No. 1. When other types of walls are used substitute the appropriate factor as follows:

No. 1.	Frame wall constructed of siding, paper sheathing, studding, lath and plaster	60
No. 2.	Frame wall constructed of siding or stucco direct to sheathing (no paper), lath and plaster	52
No. 3.	9″ brick wall (no plaster)	40
No. 4.	9″ brick wall, plastered one side	48
No. 5.	9″ brick wall, air spaced, furred and plastered	65
No. 6.	13″ brick wall, no plaster	53
No. 7.	13″ brick wall, plastered one side	57
No. 8.	13″ brick wall, air space, furred and plastered	75
No. 9.	4″ brick, 4″ hollow tile, plastered	55
No. 10.	4″ brick, paper, sheathing, studding, lath and plaster (brick veneer)	68
No. 11.	8″ hollow tile, stucco and plaster	67
No. 12.	8″ hollow tile, stucco, furred and plastered	90

Roofs.

No. 13.	1″ T. & G. sheeting, tar and gravel	48
No. 14.	1″ T. & G. sheeting and composition roof	40
No. 15.	1″ T. & G. sheeting and tin	24
No. 16.	Corrugated iron on strips	9.3

Ceilings.

No. 17.	Lath and plaster without floor above	50
No. 18.	Lath and plaster with tight floor above	90
No. 19.	Metal without floor above	40
No. 20.	Metal with tight floor above	70

(c) Method for Determining Size of Wall Stacks.

1. First Floor Rooms.
   Same as Rule A.

2. Second Floor Rooms.
   Not less than 70% of basement pipe area as determined in Rule C.

3. Third Floor Rooms.
   Not less than 70% of basement pipe area as determined in Rule C.

4. Where one stack is used to convey heat to two rooms, its net area shall be determined by adding together the areas of the two single stacks, which would be required to take care of the heat losses for each room were single stacks used.

5. In obtaining glass surface use full casement opening. An outside door is figured as glass.

6. To obtain net outside wall multiply height by width and deduct the glass in all windows and outside doors. For all rooms with attic spaces immediately above full ceiling areas shall be taken into account using Table A.

7. For rooms having unusual exposure, ordinarily north, northeast and northwest, add 15% to pipe area. For east and west exposure add 10%.

8. Use no warm air pipe less than 8 inches in diameter. If a basement warm air pipe figures greater area than any standard commercial size then the nearest commercial size shall be used; provided, however, that the total pipe area shall in no case be less than the total requirements according to Rules A, B and C.

9. It is understood in using the above values for determining basement warm air pipe areas, that these pipes should be run comparatively straight and that they should not be over 10 to 12 feet in length. Sharp turns and long pipes should have extra capacity.

10. The value of 800 (used in cubic contents) is for an estimated air change of one room volume per hour. If it is desired to provide for 1½ room volume use the figure 600. If for two rooms volume use the figure 400.

(d) Transition Fittings and Stacks.

1. Transition from warm air pipes to stacks shall be made with a well designed elbow or boot and no stack shall be less than 70% of the area of the warm air pipe leading to it.

2. All first floor fittings and connections shall maintain a free area equal to the round basement pipes leading to them.

(e) Method for Determining Size of Registers.

1. All registers shall have a free area at least equal to the area of the basement pipes leading to them.

(f) Method for Determining Size of Furnace.

1. Add together the areas (expressed in square inches) necessary for heating the building, as determined by the foregoing calculated requirements, section 79.1-4, Rules A, B, and C, and install a furnace, rated by the following formula:

Furnace Rating Formula.

L = 1.75 G (1 plus 0.02 (R-20))

L = square inches of warm air pipe connected to the furnace as calculated.
G = grate area in square inches; the area of the fire pot at the grate level; its most restricted area.
R = ratio of heating surface area to grate area; 1.75 = a constant based upon the results obtained on a furnace having 20 square feet of heating surface for each square foot of grate, and including factors for:
E = efficiency of heater;
C = combustion rate;
F = calorific value of fuel;
0.75 = percentage of heat available at registers;
136 = B. t. u. delivering value of one square inch of pipe, assuming half of the heat is sent to each floor. This value is based on an operating temperature of 175° F. at the register.

The formula allows 1.75 square inches of warm air pipe area for each square inch of grate area, for the furnace having a ratio of heating surface to grate surface of 20 to 1. For furnaces having other ratios of heating surfaces to grate surface, it adds 2% or deducts 2% for each unit above or below a ratio of 20.

Application.

	No. 1 Positive Correction	No. 2 No. Correction	No. 3 Negative Correction
Grate area, sq. in. =	346	346	346
Heating surface area sq. in. =	7540	6920	6565
Ratio heating Surface area to grate area =	21.8 to 1	20.0 to 1	16.4 to 1
R-20 =	1.8	0.0	-3.6
Correction per cent =	3.6	0.0	-7.2
1.75 G =	606	606	606
L = 1.75 G plus Correction =	628	606	562

2. In second floor duplex, flats or apartments where separate heating plants are used, add 50% to the total net calculated areas as determined in section 79.1-4, (c) 2. This represents the required warm air pipe capacity in square inches of the furnace for the second floor. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-5. (a) Location of Furnace.

The location of the furnace shall equalize the length of warm air runs as far as possible, yet give necessary preference to pipes supplying living rooms, dining rooms and main halls.

(b) Foundation.

Furnace foundation of brick, cement, or other incombustible material must be provided. Said foundation shall extend at least fifteen inches (15″) at rear and sides of furnace casing and at least thirty-six inches (36″) in front of furnace casing. Foundation to be level. Where a furnace is to be placed on combustible material, the specifications of the national board of fire underwriters shall be complied with.

(c) Setting or Assembling of Furnace.

(1) The base ring of the furnace shall be cemented to the foundation, making an air tight joint. The furnace parts shall be assembled plumb and level, and in a workmanlike manner.

(2) All sections and joints shall be properly fitted. Joints requiring cement shall be well filled and all bolts shall be drawn up tightly.

(3) Every warm air furnace shall be equipped with a water pan or humidifying device to evaporate moisture in the air.

(d) Casings.

(1) Warm air furnaces shall be enclosed in metal casings or walls of brick, tile or concrete.

(2) Portable. Sheet metal casings, including casing tops, shall be made of galvanized sheets, not lighter than 26-U. S. Standard Gauge. They shall fit the casings and casing rings closely, so as to be dust tight, and shall be securely fastened to the front. The casing shall be lined from the upper casing ring down to a line on a level with the grate.

(3) When side collars are used the casing top must be of sufficient height so that the largest warm air pipe can be taken from side without ovaling. In no case shall a distance less than eight inches (8″) be maintained between the top of any furnace and the top line of the bonnet.

(4) Any furnace, the casing top of which shall come within twelve inches (12″) of a combustible floor, ceiling or joist, shall be protected by a metal shield, extending not less than eighteen inches (18″) beyond the casing of said furnace. This shield shall be suspended at least two inches below wood work, allowing free air space between shield and wood work. No furnace casing or top, coming nearer than six inches (6″) of ceiling or joists shall be allowed in any case.

(5) Openings for side casing collars shall be cut into the casing top, so that the tops of all openings are on a level. Casing collars shall be fitted into place with a proper flange, or bead on the outside and drawn up on the inside, making a dust tight joint. All collars shall be of same size as the warm air pipes to which they are to be connected.

(6) Brick, cement or hollow tile casing shall be constructed as follows: Walls shall be not less than eight inches (8″) in thickness, and shall be constructed air tight. The least inside dimension of rectangular casing shall be the same as that of the portable casing of a corresponding size of furnace. Walls shall be carried to the same height as the portable walls, allowing not less than eight inches (8″) between the top of the furnace and the bottom of the top cover. After placing the collars for the warm air pipes, continue the masonry up two inches (2″) above the top of the collars, lay single or tee irons across the furnace top, spaced eight inches (8″), cover these with sheet metal not less than 26 U. S. S. Gauge, cover the sheet metal with masonry or sand and run the side walls four inches (4″) above the roof of the furnace. A galvanized iron casing bonnet may be used on a brick set furnace.

Provisions shall be made in the walls for a manhole to give egress to heater.

(e) Warm Air Pipes in Basement.

(1) All warm air pipes shall be made of bright tin not lighter than IC, or galvanized iron. All elbows shall be made of bright tin not lighter than IC, or galvanized iron, and shall be four piece, 90 degree. Side seams shall be locked seams. All joints shall be either double seamed or lapped not less than one and one-quarter inches (1¼″) and such joints shall be match-beaded, or beaded and soldered, or riveted. All pipes and fittings shall be properly secured to ceiling or joist. No solder or riveted joint is required where round pipe slips over the casing collar or enters boot or box. Any pipe fourteen inches (14″) or greater in diameter shall not be made of material lighter than IX tin or No. 26 U. S. Standard Gauge galvanized iron.

NOTE—It is recommended that all warm air pipes in the basement shall have an upward pitch of not less than one inch (1″) per running foot.

(2) All warm air pipes in the basement shall be provided with dampers supported on both sides not more than two feet from the casing.

(3) Where warm air pipes pass through a masonry wall, a metal thimble shall be provided, having a diameter at least one inch greater than the pipe, and the pipe supported in such a manner that the air space is uniform on all sides.

(4) All openings around first floor, wall and floor boxes and stacks to upper floors shall be sealed dust-tight.

(f) Wall Stacks.

(1) All wall stacks or wall pipes, heads, boots, ells, tees, angles and other connections shall be made of bright tin or galvanized iron and shall be covered with not less than one thickness of 12-pound per one hundred square foot of asbestos paper. All such pipes shall be braced in a proper manner so as not to obstruct the flow of air but to retain the full capacity throughout. All joints shall be fastened securely and the stacks held in place by means of lugs or straps.

(2) All warm air stacks shall be run in inside walls. Where it is absolutely necessary to run same in outside walls they shall be insulated with mineral wool or not less than three (3) thicknesses of air cell asbestos paper.

(g) Registers.

(1) When baseboard or wall registers are used they shall be attached to the stack head in such a manner that will prevent any leakage of air between the head and the register.

(2) Any furnace system having not more than two warm air registers, at least one of the registers shall be without valve or louvers and the pipe thereto shall be without damper.

(h) Air Supply to Furnace.

(1) The air supply to furnace for gravity warm air heating plants may be taken from outside or from within the building, or may be taken partially from outside and partially from within. In no case, however, shall air be supplied in any furnace from any basement or furnace room.

(2) The cold air intake or return where air is taken from within the building shall have a net area throughout its entire length of not less than the combined net area of all warm pipes leading from the furnace. This may be maintained in one or more ducts. No reverse incline or air trap will be allowed in any section thereof.

(3) When the cold air supply is taken wholly from the outside of the building the supply duct at its most contracted area must equal or exceed eighty per cent (80%) of the combined area of all warm air pipes leading from the furnace.

(4) Cold air ducts shall maintain a constant net area throughout their entire length and shall be made dust tight. Horizontal return ducts shall have at least ten per cent (10%) greater area than vertical connecting pipes. Where a boot or shoe is connected to the casing at the base, the opening shall not exceed higher than a line on the level of the grate of the furnace. The width of the shoe shall be of proper measurement to make the area at least equal to that of the round or square pipe to which it is connected.

(5) Wherever the space between joists is used to convey cold air overhead, such space shall be at least ten per cent (10%) greater in the area than the connecting pipe; and shall be sealed and air tight.

(6) When it is necessary to set the furnace over a pit and connect up cold air under the basement floor, such pit or cold air trench shall not exceed eighteen inches (18″) in depth below the casing ring and the width of the trench or trenches shall be of proper measurement to make the area at least equal to the pipe to which it is connected. The connection between the cold air pipe or duct and the underground pit shall be made with converse transition joint.

(7) The cold air face or faces shall be made of wood or metal. When set in floors the top of wood faces shall be flush with floor. Where cold air face is placed in a seat or side wall the open work of face must extend to within one-quarter inch (¼″) of the floor line.

(8) The free area of cold air faces shall be at least equal to the free area of the duct or ducts to which they are connected.

(9) The capacity of any vertical cold air face shall be determined by multiplying the base line in inches by not to exceed fourteen inches (14″) in height and deducting for the grills or cross bars.

(i) Smoke Pipes.

(1) The smoke pipe shall be as short and direct as consistent with the location of the furnace. It shall be made of metal not lighter than No. 24 U. S. Standard Gauge and not less than the full size of the collar on the furnace throughout its entire length. It must have no opening for attaching any fire place, stove, range, water heater, gas or ventilating connection. It shall be lock seamed or riveted; all joints shall lap not less than one and one-half inches (1½″) and it shall be rigidly secured. Cast iron smoke pipe may be used.

(2) All smoke pipes shall be provided with check dampers, placed on the side of the pipe or at the end of a tee; when cast iron smoke pipe dampers are used they must be placed between the check dampers and the furnace and supported on both sides of the pipe.

(3) Where the smoke pipe enters the flue, a thimble shall be cemented into the flue and the connections thereto made air tight. Should any smoke pipe come within eighteen inches (18″) of any combustible material, such combustible material must be covered with asbestos paper and a metal shield so fastened that a two-inch air space exists between this shield and the combustible material. This shield shall be no less in size than twice the diameter of the smoke pipe and of sufficient length to cover the combustible material at all points.

(4) No smoke pipe shall project through any external wall or window.

(j) Pipeless or One Pipe Furnaces.

(1) When but one duplex grating is used for both warm air and cold air, in a so-called pipeless furnace, the area of the cold air intake shall be at least equal to the area of the warm air outlet of the grating. Section 79.1-5, (d) relative to casings shall not govern when this type of furnace is installed, but the following specification shall be followed: The inner and outer casing of this type of furnace may be made of either black or galvanized iron not lighter than No. 26 U. S. Standard Gauge. A uniform air space shall be maintained at all points between the inner and outer casing. In no case shall the top of the heater be allowed closer than twelve inches (12″) to any ceiling or joists above the furnace.

(2) Where joists are cut to accommodate this furnace, headers shall be put in and braced.

(3) Section 79.1-4 for determining area of warm air pipes shall not govern in figuring a pipeless furnace.

(4) Where one warm air register face is used and separate face or faces for cold air supply are used, then section 79.1-5, (e), (g) and (h) shall apply. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-6. (1) It shall be unlawful for any person to construct, replace or install any warm air heating furnaces or appurtenances thereto within the city without first obtaining from the commissioner of buildings a permit to do such work, for which said person shall pay to said commissioner of buildings, for the use of said city, for each furnace installed, renewed or repaired the sum of five dollars.

Before a permit to install a forced warm air heating plant is issued, a diagram of the premises and estimate of the type of furnace to be used and sufficient information showing that all provisions of this code are being complied with including the details of the mechanical devices for moving or forcing warm air shall be filed with the commissioner of buildings. Provided however, that permission to install a warm air heating plant shall not in any manner approve the installation of same until after tests of same have been made to the satisfaction of the commissioner of buildings.

(2) No heating permits shall be required for minor repair work. By minor repair work is meant the incidental repairs to furnaces, which shall not affect the general action of the system, such as renewal of grates, smoke pipes and resetting old furnace in same location; or renewing of single warm air pipes in basement; but when additional runs or new stacks are installed, a permit shall be required, for which the person installing said additional runs or new stacks shall pay to the commissioner of buildings, for the use of said city, the sum of one dollar for each outlet. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-7. (1) It shall be the duty of the commissioner of buildings to cause an inspection to be made of all warm air furnaces and the appurtenances thereto hereafter installed by an inspector who is an experienced journeyman sheet metal worker competent to determine and see that same is installed or constructed in conformity to the provisions of this chapter. The expenses of such inspection shall be paid out of the fees received for permits to install or construct such warm air furnaces and appurtances.

(2) Inspection of new work in new buildings shall be made as follows: When such work has proceeded to where the stacks to upper floors and heads for all side wall registers have been installed, boots connected thereto, the contractor, or person obtaining permit for this work, shall notify the commissioner of buildings, who shall make or cause to be made an inspection of such work. Upon finding that the work complies in all respects with the terms of this chapter there shall be affixed by said commissioner of buildings, or his representative, to each stack register head a certificate stating that the work complies with the ordinance relating thereto.

(3) Inspection of new work in buildings already constructed, shall be made only after installation is completed.

(4) Final inspection of plant shall be made after the whole is connected up and ready to operate.

(5) It shall be unlawful for any person to lath over, plaster or cover up any warm air heating work before such work in new buildings or completed buildings where plaster and lath have been removed, has been inspected and certificates above referred to have been attached. The commissioner of buildings shall have the right and authority to remove or order removed all such lath, plaster or other coverings which may have been placed over such work before same has been inspected. The person ordering or causing such work to be covered up, or in any way violating any section of this chapter as herein set forth, shall, upon conviction, be subject to the penalties set forth for violation of the terms of this chapter. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-8. It shall be unlawful for any person to engage in the business of installing gravity warm air heating plants or forced warm air heating plants with necessary appurtenances thereto as heretofore defined without being registered as a warm air furnace heating and installing contractor in the manner hereinafter set forth. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-9. Any person desiring to engage in the business of warm air furnace heating and installing contractor shall apply for registration to the commissioner of buildings. Upon the filing of such application in proper form and the payment of registration fee fixed herein, the commissioner of buildings shall register the applicant as a warm air furnace heating and installing contractor and shall issue to the applicant a certificate of registration which will authorize the applicant to engage in such business for the year in which it is issued; providing that such applicant has filed with the city clerk an indemnifying bond as hereinafter set forth. The commissioner of buildings shall keep a suitable record of such registrations. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-10. Prior to the issuance of a certificate of registration for warm air furnace heating and installing contractor, the applicant shall file with the city clerk an indemnifying bond with good and sufficient sureties in the penal sum of ten thousand dollars, such bond being payable to the City of Chicago, for the use of any persons with whom such applicant shall thereafter contract to do work, to indemnifying any such person for damages sustained on account of the failure of such applicant to perform the work so contracted for, in accordance with the provisions and requirements of the city relating to the installation of gravity warm air heating plants or forced warm air heating plants with necessary appurtenances thereto. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-11. The fee for initial registration as a warm air furnace heating and installing contractor shall be twenty-five dollars which sum shall be paid by the applicant to the city collector in advance upon filing his application; provided, however, that any registrant may renew his registration upon the payment of an annual renewal fee of ten dollars. The certificate of registration or renewal issued thereunder shall expire on the 31st day of December of the year in which it is issued. [Added. Coun. J. 4-2-41, p. 4544.]

79.1-12. Any person who shall engage in the business of a warm air furnace heating and installing contractor without obtaining a certificate of registration as herein provided for, or that shall violate any of the provisions of this chapter shall be fined not less than fifty dollars nor more than two hundred dollars for each offense and a separate and distinct offense shall be regarded as committed every day on which such person shall continue to operate contrary to the provisions of this chapter. [Added. Coun. J. 4-2-41, p. 4544.]

CHAPTER 80

HEATING PROVISIONS

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General Provisions

80-1. All heat producing appliances used within buildings or structures shall conform to the general and structural provisions of this code pertaining to buildings, and to the special provisions of this chapter, except as otherwise provided by occupancy chapters in the building provisions of this code. Plans shall be required to show the general location of all heat producing appliances and equipment conforming with these provisions before the issuance of building permits.

80-2. A heat producing appliance is defined as any device used for the production of heat by the combustion of fuel.

80-3. All multiple dwellings, hospitals, office and financial units, theaters, public assembly units, churches, schools, jails, police stations, prisons, and reformatories shall be provided with heating appliances and equipment capable of maintaining within all habitable rooms thereof, a minimum temperature of sixty-five degrees Fahrenheit, when the outside temperature is ten degrees below zero Fahrenheit.

80-4. The exposed surface of any heat producing appliance or any part thereof, shall be not less than the following distances from any wall or ceiling, depending on the temperature of the exposed surface:

	Combustible		Non-Combustible	
	Walls	Ceiling	Walls	Ceiling
Heat producing appliances except domestic stoves, ranges, water heaters, and space heaters located in the space to be heated, the maximum temperature of exposed surface of which does not exceed 300 de-				

grees Fahrenheit	15″	18″	4″	6″
Heat producing appliances except domestic stoves, ranges, water heaters, and space heaters located in the space to be heated, the maximum temperature of exposed surface of which is from 300 degrees to 800 degrees Fahrenheit	22″	22″	8″	8″
Heat producing appliances the maximum temperature of exposed surface of which exceeds 800 degress Fahrenheit	Not permitted		12″	12″
Domestic stoves, ranges, and water heaters using solid fuel, without shields	12″	......	No requirements	
Domestic stoves, ranges, and water heaters using solid fuel with shields of metal or non-combustible insulating materials so attached as to form an open space behind and to extend from the bottom of such an appliance to one foot above the top	6″	......	No requirements	
Domestic stoves, ranges and water heaters using liquid fuel	6″		No requirements	
Hotel and restaurant ranges using gas	6″		No requirements	
Domestic stoves, ranges and water heaters using gas—uninsulated	6″		No requirements	
Domestic stoves, ranges and water heaters using gas—insulated and bearing seal of approval of American Gas Association	1″		No requirements	
Domestic stoves, ranges and water heaters using gas—insulated flush type and bearing seal of approval of American Gas Association	No heated surface less than 1″		No requirements	
Smoke pipes and breechings, except domestic stoves and ranges, unlined and uncovered or insulation less than prescribed	24″	24″	8″	8″
Smoke pipes and breechings lined with a refractory material not less than two inches thick or the covering of smoke pipes and breechings covered with insulating material equivalent to not less than two inches of eighty-five per cent magnesia	12″	12″	No requirements	
Ducts and flues from heat producing appliances where food is cooked or where from any other cause, grease or other flammable substances are produced	12″	12″	No requirements	

No heat producing appliance or any part thereof not provided for in the above table shall be placed close enough to a combustible wall, ceiling, or other part of any building to cause the temperature of the surface of such combustible wall, ceiling, or other part to rise more than ninety degrees Fahrenheit above the temperature of the room. The minimum distance between such heat producing appliance and any combustible construction shall be three inches. [Amend. Coun. J. 11-29-39, p. 1359.]

Construction

80-5. Every heat producing appliance, the exposed bottom surface of which cannot attain a temperature of more than three hundred degrees Fahrenheit shall be placed on:

(a) Foundation on soil;
(b) A standard furnace foundation as provided in section 80-8;
(c) A non-combustible floor; or
(d) Non-combustible supports providing a clearance of not less than four inches between the floor and the bottom of the appliance open on at least three sides.

80-6. Where the exposed bottom surface temperature of the appliance is more than three hundred degrees and not more than eight hundred degrees Fahrenheit, the appliance shall be placed on:

(a) A foundation on soil;
(b) A standard furnace foundation as provided in section 80-8;
(c) A non-combustible floor; or
(d) Non-combustible supports providing a clearance of not less than twenty-two inches between the floor and the bottom of the appliance, open on all sides.

80-7. Where the exposed bottom surface temperature of the appliance is more than eight hundred degrees Fahrenheit, the appliance shall be placed on:

(a) A foundation on soil;
(b) A non-combustible floor and a standard furnace foundation as provided in section 80-8; or
(c) A non-combustible floor and non-combustible supports providing a clearance of not less than twenty-two inches between the floor and the bottom of the appliance, open on all sides.

80-8. Wherever a standard furnace foundation is required by the building provisions of this code, such foundation shall be constructed as required by this section. There shall be an iron or steel plate of such dimensions that it will cover the floor underneath the furnace, oven or other equipment for which it is required and will extend at least three feet in front of and at least two feet beyond each side and the rear of such furnace, oven or other equipment. Such plate shall be at least one-sixteenth inch thick, with all joints riveted or welded and shall be turned up vertically at each edge to a height of at least four inches. On top of the plate there shall be a layer not less than three and three-fourths inches thick, of brick set in cement mortar. On top of the layer of brick there shall be a layer of hollow tile, not less than four inches thick, also set in cement mortar, with the openings in the tile forming continuous ducts. Such layer of hollow tile shall be required only underneath the furnace, oven or other equipment and shall not be required to extend beyond the limits thereof.

80-9. All ash pits or receptacles for ashes from heat producing appliances, including floors, walls, and covers, if any, shall be of non-combustible materials.

Smoke and Gas Disposal

80-10. Every heat producing appliance using solid fuel and every heat producing appliance using liquid fuel with a supply tank of more than two gallons capacity shall be provided with a smoke pipe, breeching, flue, or vent which will carry the products of combustion to the outside air. Every heat producing appliance using gas, except as follows, shall be provided with a similar smoke pipe, breeching, flue, or vent, which, if for a cooking appliance, may be connected to the suction of a mechanical ventilating exhaust system provided for the space in which the appliance is located.

(a) A water heater having an input at maximum rating of not more than ten thousand British thermal units per hour.

(b) A space heating appliance located in the space to be heated and having an input at maximum rating of not more than ten British thermal units per hour per cubic foot of space to be heated.

(c) A cooking appliance having an input, exclusive of the top burner section, of not more than fifty thousand British thermal units per hour.

(d) Any other household appliance not located in a habitable room and having an input at maximum rating of not more than thirty British thermal units per hour per cubic foot of space in the room in which the appliance is located.

The chimney to which any smoke pipe, breeching, or other flue or vent from a heat producing appliance is connected shall be constructed in accordance with the requirements of chapter 76 of this code. No such smoke pipe, breeching, flue, or vent shall pass through any floor or roof unless such floor or roof is of non-combustible construction, and then only through one such floor; not through any combustible partition unless the clearances hereinafter prescribed are provided; except that a smoke pipe for a domestic stove or range may pass through such partition if it is guarded by a double metal ventilated thimble not less than six inches larger than the pipe or by a steel tube built in brick work or other equivalent fireproofing material extending not less than eight inches beyond all sides of the tube. Every connection of a smoke pipe or breeching to a chimney shall be made tight with non-combustible material. Not more than eighty per cent of the internal cross sectional area of any smoke pipe or flue shall be closed off by any damper or automatic draft regulating device except where two or more heat producing devices are connected to a common smoke pipe or flue. There shall be no construction which will impede the free circulation of air around the entire surface of any smoke pipe, breeching, flue, or vent. [Amend. Coun. J. 2-21-40, p. 2019; 4-3-40, p. 2273.]

80-11. Every range or other heat producing appliance where food is cooked in any restaurant or hotel kitchen or food establishment, or where from any cause, grease, or other flammable substances are produced, shall be provided with a non-combustible hood or curtain wall enclosure. Every such hood or curtain wall enclosure shall be connected by an independent duct or other suitable means to a mechanical ventilating exhaust system which shall discharge independently above the roof or by a flue connection to a chimney which will take off all smoke, gases and vapors. Hoods, curtain walls, ceiling inside of curtain walls, and all ducts or flue connections shall be of non-combustible material and if sheet metal they shall be of not less weight than No. 14 U. S. gauge securely riveted or welded. If a mechanical ventilating exhaust system is installed, ducts exhausting from other portions of the room may be connected to the hood or curtain wall inclosure exhaust duct through a section of No. 14 U. S. gauge sheet metal not less than four feet long, equipped with a damper with fusible link. Every fan used to exhaust from hoods or spaces inclosed by curtain walls shall be provided with a by-pass around the fan, which shall be equipped with a fire damper held in place by a fusible link arranged in such manner that in normal operation all exhaust gases will pass through the fan, but in case of fire in the duct the damper will close against the inlet of the fan and open the by-pass so that products of combustion will pass directly to the atmosphere. Means shall be provided for replacing fusible links and for cleaning the inside of ducts.

80-12. Flues and vents to which gas fired heat producing appliances are connected shall have cross-sectional areas not less than the aggregate areas of the vent outlets of the appliances connected thereto. Every flue connected gas fired heat producing appliance, except an incinerator, unless its construction serves the same purpose, shall be provided with a draft hood or equivalent device, designed:

(a) To insure the free escape of the products of combustion if there is no draft, if there is any back draft, or if any stoppage occurs between the draft head and the outlet to the outside air.

(b) To prevent a back draft from entering the appliance, and

(c) To neutralize the effect of stack action of the flue upon the operation of the appliance.

80-13. Every breeching, smoke pipe, flue, vent, or other duct carrying gases or other products of combustion, the temperature of which may exceed eight hundred degrees Fahrenheit, shall be lined with a refractory material not less than two inches thick or covered with an insulating material equivalent to not less than two inches of eighty-five per cent magnesia; provided, however, that any such ducts which are used in industrial processes within any building of non-combustible construction shall be exempt from the requirements of this section.

Warm Air Heating

80-14. [Rep. Coun. J. 4-2-41, p. 4549.]

80-15. [Rep. Coun. J. 4-2-41, p. 4549.]

80-16. [Rep. Coun. J. 4-2-41, p. 4549.]

80-17. [Rep. Coun. J. 4-2-41, p. 4549.]

80-18. [Rep. Coun. J. 4-2-41, p. 4549.]

80-19. [Rep. Coun. J. 4-2-41, p. 4549.]

Oil Burners

80-20. Oil burners are any devices designed to burn fuel oil, having a flash point of one hundred degrees Fahrenheit, or higher, and having a connected fuel tank or container with a capacity of more than ten gallons.

80-21. All fuel oil storage tanks and piping connected to oil burners shall be as required by chapter 51 of this code.

80-22. Oil burners shall be provided with means for manually stopping the flow of oil to the burners, from a point at a safe distance from the burner. Automatically operated oil burners used in steam or water boilers or fan type forced warm air furnaces shall be equipped with automatic devices which will shut down the burners in the event of undue steam pressure, excessive water temperature, or excessive air temperature within the heat producing appliance. Such systems shall also be equipped with automatic devices to shut off the oil supply to the burners in case of failure of ignition, or interruption of the supply or atomization of oil. All electric controls and electric wiring shall conform to the requirements of the electrical provisions of this code.

80-23. Where oil burners are hereafter installed in heat producing appliances designed for solid fuel, bottom ventilation shall be provided to prevent the accumulation of vapors in the ash pit, unless such pit is automatically purged by the burner.

Gas Burners

80-24. Gas burners provided with automatic control to turn on and off the gas automatically shall be equipped with a device to shut off the gas supply to the main burner or burners in case of failure of ignition or interruption of the gas supply. Automatically operated gas burners used in steam or water boilers or fan type forced warm air furnaces shall be equipped with automatic devices which will shut down the burners in the event of undue steam pressure, excessive water temperature, or excessive air temperature within the heat producing appliance.

Domestic Gas Hot Water Heaters

80-24.1. No person shall install or connect any hot water heater in any building or structure for heating water for domestic use in said building or structure by the use of natural or artificial gas as fuel, without first having obtained a permit therefor. [Added. Coun. J. 3-20-40, p. 2167.]

80-24.2. An application for a permit to install or connect any domestic gas hot water heater shall be filed with the commissioner of buildings upon a form furnished by said commissioner, containing the name of the applicant, the street number of the building in which the heater is to be used (and if the building is an apartment building, the location of the apartment), the floor plan of the room, the proposed position of the heater, the location of the plumbing fixtures, the location and dimensions of the door and window openings, and the course of the gas duct or ventilating pipe to the outer air or to a chimney connection. No permit shall be issued until such application is approved by the commissioner of buildings. [Added. Coun. J. 3-20-40, p. 2167; Amend. Coun. J. 6-26-41, p. 5186.]

80-24.3. The commissioner of buildings shall issue a permit to the applicant upon the payment by him of a fee of $1.00 for every non-instantaneous heater and $3.00 for every automatic instantaneous heater desired to be installed or connected. The receipt for the payment of said fee, together with the approved application, shall constitute the permit required for such installation or connection. [Added. Coun. J. 3-20-40, p. 2167; Amend. Coun. J. 6-26-41, p. 5186.]

80-24.4. No person shall install or connect any domestic gas hot water heater unless it be provided with a metallic hood to which there shall be connected a suitable ventilating pipe not less than two inches in diameter, which pipe shall extend to a chimney flue or to the open air in such a way as to carry off all escaping gases or fumes from such heater. In case such ventilating pipe shall extend to the open air, it shall be provided with a suitable cap or cowl so as to prevent a back draft.

Every such heater shall be provided with a convenient and adequate means of access to the burners and heating services for the purpose of lighting and cleaning the same.

No such gas water heater shall be set closer to a wooden floor than 20 inches, measuring from the top of the burner. [Added. Coun. J. 3-20-40, p. 2167.]

80-24.5. All instantaneous domestic gas hot water heaters, automatically controlled by pressure valve and thermostat, shall conform to the foregoing structural requirements, except that they may have pilot lights located entirely within the casing and arranged for a continuous burning and that they may be set with top burners not less than eight inches above the floor; provided, that every such heater shall be set on a non-combustible floor or a sheet metal mat or pan and that the walls behind said burner shall be protected by sheet metal covering the height of the heater. [Added. Coun. J. 3-20-40, p. 2167.]

80-24.6. No domestic gas hot water heater shall be installed in any bathroom or toilet room. [Added. Coun. J. 3-20-40, p. 2167.]

80-24.7. It shall be the duty of the owner or person in possession or control of any building or structure where domestic gas hot water heaters have heretofore been installed to make such heaters comply with the provisions of this chapter relating to gas water heaters, and it shall be unlawful for any person to use any such heater until it shall have been made to conform with said provisions. [Added. Coun. J. 3-20-40, p. 2167.]

Boilers

80-25. The material and construction of boilers shall be in accordance with the Rules for the Construction of Power Boilers and Other Pressure Vessels and for their Care in Service including sections 1 to 7, inclusive, of the American Society of Mechanical Engineers' Boiler Construction Code, dated 1937, where the same apply to the type of boilers which is used.

Pipe and Duct Coverings

80-26. All pipes or ducts carrying steam, hot gases, or any other vapor or medium having a temperature of more than two hundred fifty degrees Fahrenheit, shall have a clearance of not less than one inch from all combustible materials. All such pipes shall be surrounded by metal collars where they pass through combustible floors, ceilings, or partitions.

80-27. All covering or insulation used on pipes or ducts extending vertically or approximately vertically within a pipe shaft or other open space to a height of fifty feet or more shall be of non-combustible material, except for a surface covering of single ply fabric. The covering or insulation for pipes or ducts run horizontally or approximately horizontally in a story of any height shall not be required to be of non-combustible material, except as otherwise required for furnace piping.

Violation of Chapter Provisions

80-28. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 81

VENTILATION

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General Provisions

81-1. Ventilation is hereby defined as the providing and maintaining in rooms or spaces, by natural or mechanical means, air conditions which will protect the health and comfort of the occupants thereof.

81-2. The installation of all ventilating systems provided for in this code shall be done in conformity with the provisions of this chapter.

The ventilating requirements, as herein stated, shall apply to every room hereafter designed, erected, altered, or converted for the purposes enumerated.

Openings required by hazardous room purposes, to remove heat or gases which may accumulate, for fire prevention, and for any other cause except health and comfort of the human occupants of the rooms shall be provided as required by other chapters of this code.

81-3. Ventilation may be produced by:

(a) A natural ventilating system which is hereby defined as a ventilating system, the effectiveness of which depends upon natural atmospheric conditions and upon the operation of windows, doors, transoms and other openings, the operation of which is in control of the person or persons in the room or space which is ventilated.

(b) A mechanical ventilating supply system, which is hereby defined as a system for forcing air into a room or space by artificial means combined with the removal of air through windows, skylights, transoms, doors, grilles, shafts, ducts, or other openings.

(c) A mechanical ventilating exhaust system, which is hereby defined as a system for removing air from a room or space by artificial means combined with a supply of air through windows, skylights, transoms, doors, grilles, shafts, ducts, or other openings.

81-4. Ventilating openings in any room or space are hereby defined as apertures opening upon a public way, yard, court, public park, public waterway, or onto a roof of a building or structure in which the room or space is situated. They shall be windows, skylights, transoms, or auxiliary openings which are provided for ventilating purposes and which are equipped with adjustable louvres, dampers, or other devices to deflect or diffuse the air currents.

81-5. The area of ventilating openings shall be computed as follows:

Windows. The maximum area that can be opened.

Skylights. The area of the maximum opening to the outer air, provided that it does not exceed the area of the sashed openings to the outer air, or the area of the skylight well. If this area exceeds either the area of the sashed openings or the skylight well, the smaller area is the ventilating area.

Transoms. The free area through the sashed opening if the transom swings through an arc of not less than sixty degrees. It is the same percentage of the free area as the maximum angle of the transom when open is to sixty degrees if the transom swings through an arc of less than sixty degrees.

Auxiliary openings. The free area when louvres, dampers, or other devices are in position to deflect or diffuse the air currents in such a manner that there will be no objectionable drafts.

Ventilation Requirements

81-6. The ventilating requirements shall be based on the purposes for which the rooms are used, regardless of the class of building or structure in which it is located.

The method of producing ventilation and the quantities of air to be supplied and exhausted by mechanical ventilating systems stated in the table in section 81-7 are the minimums permitted. Where it is stated that natural ventilation is required, this may be supplemented but not replaced by a mechanical ventilating supply system or a mechanical ventilating exhaust system, or both.

81-7. Table of Ventilating Requirements

ROOM PURPOSE	CONDITIONS			REQUIREMENTS
	Areas of ventilating openings in percentage of floor area		Other conditions	Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
	Less than	Not less than		
Anaesthetizing rooms				S 1.2 and E 1.2
Aquariums				No requirements
Armories (drilling spaces)		5		No requirements
	5			S .8
Art rooms				Same as for "Reading rooms"
Auditoriums, except those used for worship only			Capacity 601 or more persons	S 3.0 and E 1.5 in open spaces having no fixed seats plus S 30. and E 15. for each fixed seat.
		5	Capacity 600 or less persons	S 3.0 in open spaces having no fixed seats plus S 30. for each fixed seat. E through shafts or other openings for natural exhaust having a total ventilating opening of not less than .5 of 1% of the floor area as uniformly distributed as practicable and open when the room is in use without causing objectionable drafts.
	5			S 3.0 and E 1.5 in open spaces having no fixed seats plus S 30. and E 15. for each fixed seat.
Auditoriums used for worship only		3		No requirements
	3			S 1.5

81-7. Table of Ventilating Requirements:—Continued

ROOM	CONDITIONS			REQUIREMENTS
PURPOSE	Areas of ventilating openings in percentage of floor area Less than	Not less than	Other conditions	Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
Auditoriums in connection with private schools				No requirements
	3			S 1.5
Autopsy rooms		5		No requirements
	5			S 1.0 or E 1.0
Bakeries				Same as for "Food baking rooms"
Ball rooms				Same as for "Dance halls"
Band rooms				Same as for "Reading rooms"
Banking rooms (public and teller spaces)			Stories below that nearest to grade	S 1.2 and E 1.2
		5	Other stories	No requirements
	5			S 1.0 or E 1.0
Bank vaults attended				S 1.6 or E 1.6
Banquet halls				S 2.0 and E 2.0
Bath rooms		5		No requirements
	5			E 1.0
Beauty parlors		5		No requirements
	5			S 1.2 and E 1.2
Billiard rooms			Having more than four tables	S 1.6 and E 2.0
		5	Having four or less tables	No requirements
	5	3		S 1.6 or E 1.6
	3			S 1.6 or E 2.0
Board of Trade Trading rooms		5		No requirements
	5	3		S 2.0 or E 2.0
	3			S 2.0 and E 1.0
Boiler rooms				No requirements
Bowling alleys		5		No requirements
	5	3	Disregard floor area from foul line to pit	S 3.0 in open spaces having no fixed seats plus S 30. for each fixed seat or E 3.0 in open spaces having no fixed seats plus E 30. for each fixed seat.
	3			S 3.0 and E 3.0 in open spaces having no fixed seats plus S 30. and E 30. for each fixed seat.
Brokers board rooms				Same as for "Board of Trade (trading rooms)"
Cab stands				See note No. 1 at end of table
Cabarets				Same as for "Dance halls"
Cafeterias				Same as for "Dining rooms in which there is cooking equipment, public"
Chapels				Same as for "Auditoriums used for worship only"
Chart rooms				Same as for "Offices"
Circuses (arena)				No requirements
Circuses (spectators' spaces)				Same as for "Auditoriums, except those used for worship only"
Class rooms in private schools		8		No requirements
	8	5		S 1.5 or E 1.5
	5			S 1.5 and E .75
Class rooms in public schools				S 1.5 and E .75

81-7. Table of Ventilating Requirements:—Continued

ROOM PURPOSE	CONDITIONS			REQUIREMENTS
	Areas of ventilating openings in percentage of floor area		Other conditions	Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
	Less than	Not less than		
Closets				No requirements
Coat rooms		5		No requirements
	5			E .8
Cold storage rooms				No requirements
Community halls			Floor area more than 1500 square feet	S 2.0 and E 1.0
		5	Floor area not more than 1500 square feet	S 1.5
	5			S 1.5 and E .75
Concert halls				Same as for "Auditoriums except those used for worship only"
Conservatories				No requirements
Convention halls				Same as for "Auditoriums except those used for worship only"
Cooking rooms for instruction purposes only		5		E 1.2
	5			S 1.0 and E 1.2
Cooling and refrigerating machinery rooms				No requirements
Corridors				No requirements
Council chambers				Same as for "Auditoriums except those used for worship only"
Court rooms				Same as for "Auditoriums except those used for worship only"
Dance halls		4		S 3.0 and E 1.5
	4	3		S 3.0 and E 2.0
	3	2		S 3.0 and E 2.5
	2			S 3.0 and E 3.0
Delivery rooms				Same as for "Operating rooms"
Dining rooms in which there is no cooking equipment, public		5	Floor area not more than 400 square feet	No requirements
			Floor area more than 400 square feet	S 1.6 or E 1.6
	5	3		S 1.6 or E 1.6
	3			S 1.6 and E 1.6
Dining rooms in which there is cooking equipment, public		3		E 2.0
	3			S 1.5 and E 2.0
Doctors' and dentists' examination rooms				Same as for "Offices"
Dormitory rooms				Natural ventilation
Drawing rooms				Same as for "Reading rooms"
Dressing rooms		5		No requirements
	5	3		S 1.2 or E 1.2
	3			S 1.2 and E 1.2
Dry cleaning rooms				E 4.0
Electric sub-stations attended				No requirements
Electric sub-stations unattended				No requirements

81-7. Table of Ventilating Requirements:—Continued

ROOM PURPOSE	CONDITIONS			REQUIREMENTS
	Areas of ventilating openings in percentage of floor area		Other conditions	Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
	Less than	Not less than		
Electric transformer vaults				No requirements
Enameling rooms				Same as for "Work shops"
Engine rooms				No requirements
Excelsior storage rooms				No requirements
Exercise rooms				Same as for "Gymnasiums"
Exhibition rooms except picture galleries (for permanent exhibits)				No requirements
Exhibition rooms except picture galleries (and except those for permanent exhibits)		5		S 2.0
	5			S 2.0 and E 2.0
Explosive gas storage rooms				No requirements
Exposition rooms				Same as for "Exhibition rooms"
Fan rooms				No requirements
File rooms				Same as for "Offices"
Food baking rooms			Stories below that nearest to grade	S 1.2 and E 1.2
		5	Other stories	No requirements
	5			E .6
				See note No. 2 at end of table
Foyers in theaters having a single performance				S 1.5 or E 1.5
Foyers in theaters having a continuous performance				S 3.0 or E 3.0
Foyers in club houses and hotels		5		No requirements
	5			S .8
Foyers, except in theaters, club houses and hotels				No requirements
Fraternal halls				Same as for "Community halls'
Freight handling rooms				No requirements
Game rooms				Same as for "Billiard rooms"
Garage spaces for automobiles operated under own power, single floor or elevator type, capacity 5 or more cars			Entrance story	E 3.0 in main entrance drive plus E .5 in car storage space
			Any story except entrance story	E .5 in car storage space
Garage spaces for automobiles operated under own power, ramp type, capacity 5 or more cars			Any story below entrance story	E 2.0 in ramps and drives between ramps in first story below entrance story, which may be reduced .2 for each story below (minimum E .5) plus E .5 in car storage space
			Entrance story	E 3.0 in main entrance drive to ramp plus E .5 in car storage space

81-7. Table of Ventilating Requirements:—Continued

ROOM PURPOSE	CONDITIONS: Areas of ventilating openings in percentage of floor area		CONDITIONS: Other conditions	REQUIREMENTS: Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
	Less than	Not less than		
			Any story above entrance story	E 2.0 in ramps and drives between ramps in second story, which may be reduced .2 for each story above (minimum E .5) plus E .5 in car storage space.
Garage communication vestibule, pedestrian				S .6
Passages (enclosed) for vehicles using internal combustion engines				E 3.0 See note No. 3 at end of table
Green rooms				Same as for "Dressing rooms"
Grills				Same as for "Dining rooms in which there is cooking equipment, public"
Gymnasiums		5		No requirements
	5			S .8 to which the following shall be added if seats are provided for spectators. S 2.0 in open spaces with no fixed seats and S 20. for each fixed seat.
Halls (corridors)				No requirements
Hangars				No requirements
Inflammable gas storage rooms				No requirements
Instruction rooms not otherwise specifically noted				Same as for "Class rooms"
Janitors' closets				No requirements
Japanning rooms				Same as for "Work shops"
Kitchens, public		3		E 4.0
	3			S 1.2 and E 4.0
Kitchens, non-public				Same as for "Living quarters"
Laboratories, chemical		5		No requirements
	5			E .6
				See note No. 2 at end of table
Laboratories, except chemical				Same as for "Offices" See note No. 2 at end of table
Lacquering rooms				Same as for "Work shops"
Laundries containing equipment which can be used by not more than one family at one time		2½		No requirements
	2½		Minimum area of ventilating openings 1½% of floor area	E 1.0
Laundries containing equipment which can be used by more than one family at one time but not serving the general public		5		No requirements
	5		Minimum area of ventilating openings 1½% of floor area	E 1.0
Laundries, serving the general public		10		No requirements
	10			E 1.5
Lecture rooms				Same as for "Community halls"

81-7. Table of Ventilating Requirements:—Continued

ROOM PURPOSE	CONDITIONS			REQUIREMENTS
	Areas of ventilating openings in percentage of floor area		Other conditions	Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
	Less than	Not less than		
Libraries				Same as for "Reading rooms"
Linen rooms				Same as for "Storage rooms, active storage"
Living quarters			Sitting rooms, living rooms, parlors, and other rooms of similar use; Dining rooms, bed rooms and kitchen (except closet kitchens) having a floor area of not more than sixty square feet.	Natural ventilation
			Closet kitchens having a floor area of not more than sixty square feet.	Natural ventilation or, in lieu of this, natural exhaust thirty-two sq. in. for each kitchen served connected to a vertical duct leading directly to atmosphere, or E 1.0 and either S .9 or natural supply eighty sq. in. per one hundred sq. ft. of floor area.
Loading spaces and appurtenant driveway areas in manufacturing and storage units, for vehicles using internal combustion engines.				E. 5 (See note No. 6 at end of table)
Lobbies in theaters having a single performance				S 1.2 and E 1.5
Lobbies in theaters having continuous performance				S 3.0
Lobbies in club houses and hotels		5		No requirements
	5			S .6
Lobbies, except in theaters, club houses and hotels				No requirements
Locker rooms		5		No requirements
	5			E 1.2
Lodge halls				Same as for "Community halls"
Lounges				Same as for "Lobbies in club houses and hotels"
Lumber storage rooms				No requirements
Lunch counters				Same as for "Dining rooms in which there is cooking equipment, public"
Lunch rooms				Same as for "Dining rooms in which there is cooking equipment, public"
Machinery rooms for building equipment				No requirements
Medicine rooms				Same as for "Laboratories, chemical"
Morgues				Natural ventilation
Motion picture studios				S 1.5 and E 1.5 See note No. 2 at end of table
Museums				No requirements
Music rooms				Same as for "Reading rooms"
Musicians' rooms				Same as for "Dressing rooms"
Natatoriums			Disregard area of swimming pool.	Same as for "Gymnasiums"

81-7. Table of Ventilating Requirements:—Continued

ROOM	CONDITIONS			REQUIREMENTS
PURPOSE	Areas of ventilating openings in percentage of floor area		Other conditions	Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
	Less than	Not less than		
Non-habitable rooms, except as noted otherwise				No requirements
Offices, except intermediate rooms		5		No requirements
	5	2½		S .6
	2½			S .6 and E .3
Offices, intermediate			If ventilating openings having 5% of floor area of intermediate room are located in the partitions separating said room from another room having ventilating openings not less than 5 per cent of the floor area of both rooms and if ventilating openings having 2½ per cent of floor area of intermediate room are located in wall or corridor.	No requirements
Rooms			If ventilating openings of less area than noted above are located in either wall above mentioned.	S 1.0 or E 1.0
			If no ventilating openings in either wall above mentioned.	S 1.2 and E .9
Operating rooms				S 1.2 and E 1.2
Packing rooms		5		No requirements
	5			S .6 or E .6
				See note No. 2 at end of table
Paint mixing rooms				Same as for "Work shops"
Paint shops				Same as for "Work shops"
Paint spraying rooms				Same as for "Work shops"
Pantries, butlers'				No requirements
Pantries, serving		5		No requirements
	5	2		E 2.0
	2			S 1.2 and E 2.0
Pantries, other than butlers' and serving				No requirements
Paraffin, pitch, resin, tar and similar heating rooms				No requirements See note No. 2 at end of table
Patients' private rooms				Natural ventilation
Picture galleries				S .6 or E .6
Picture projection rooms			One machine	Natural exhaust one hundred sixty sq. in. area of duct and an independent mechanical exhaust from machine housing one hundred fifty.

81-7. Table of Ventilating Requirements:—Continued

ROOM PURPOSE	CONDITIONS Areas of ventilating openings in percentage of floor area		CONDITIONS Other conditions	REQUIREMENTS Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
	Less than	Not less than		
Picture projection rooms (cont')			Two or more machines	E 1.0 and independent mechanical exhaust from machine housing total based on one hundred fifty for each housing. See note No. 4 at end of table
Pool rooms				Same as for "Billiard rooms"
Pressing rooms				Same as for "Work shops"
Printing shops				Same as for "Work shops"
Police station cell rooms		5		No requirements
	5			S 1.2
Property rooms				Same as for "Storage rooms"
Promenades, enclosed				Same as for "Foyers in club houses and hotels"
Reading rooms		5		No requirements
	5			S 1.2
Receiving rooms				Same as for "Packing rooms"
Reception rooms in connection with offices				Same as for "Offices, intermediate rooms"
Reception rooms, except in connection with offices, public				Same as for "Lobbies in club houses and hotels"
Recreation rooms				Same as for "Gymnasiums"
Repair shops, automobile				Same as for "Work shops"
Rest rooms				Same as for "Offices"
Retiring rooms				Same as for "Offices"
Safe depositories (coupon spaces)				Same as for "Banking rooms (public and teller spaces)"
Sales rooms, department stores			Stories below that nearest to grade	S 1.5 and E 1.5
			Story nearest to grade	S 1.0
		5	Stories above that nearest to grade	No requirements
	5			S .6
Sales rooms (except department stores)			Stories below that nearest to grade	S 1.2 and E 1.2
		5	Stories nearest to grade and above	No requirements
	5			S .5 or E .5
Serving rooms				Same as for "Pantries, serving"
Shipping rooms				Same as for "Packing rooms"
Skating rinks, ice		5		No requirements
	5	4		S 1.8 and E .9
	4	3		S 1.8 and E 1.2
	3	2		S 1.8 and E 1.5
	2			S 1.8 and E 1.8
Skating rinks, roller				Same as for "Dance halls"

81-7. Table of Ventilating Requirements:—Continued

ROOM PURPOSE	CONDITIONS Areas of ventilating openings in percentage of floor area Less than	 Not less than	 Other conditions	REQUIREMENTS Cubic feet of air per minute supplied or exhausted per square foot of floor area of rooms. Except as otherwise noted. S indicates mechanical supply E indicates mechanical exhaust
Sleeping rooms (except sleeping stall rooms and rooms otherwise specifically noted)				Natural ventilation
Sleeping stall		5		No requirements
rooms	5			S .5 and E .5
Slop sink rooms				No requirements
Smoking		5		No requirements
rooms	5			S 1.0 and E 1.5
Stables				No requirements
Stage hands rooms				Same as for "Dressing rooms"
Storage battery rooms				E 1.0
Storage rooms,		2		No requirements
active storage	2			E .4
Storage rooms, inactive storage				No requirements
Study rooms				Same as for "Class rooms"
Sunday school rooms				Same as for "Auditoriums used for worship only"
Teaching amphitheaters, (instructors' spaces)				S 1.2 and E 1.2
Teaching amphitheaters, (spectators' spaces)				S 3.0 and E 3.0 in open spaces with no fixed seats and S 30. and E 30. for each fixed seat
Telephone apparatus		5		No requirements
rooms, attended	5			S .4
Telephone apparatus rooms, unattended				No requirements
Telephone exchange board rooms,		5		No requirements
manually operated	5			S 1.2 and E .9
Toilet		5		No requirements
rooms	5			E 2.0
Transformer rooms				Same as for "Electric transformer rooms"
Treatment rooms				Same as for "Offices"
Urinal rooms				Same as for "Toilet rooms"
Ushers' rooms				Same as for "Dressing rooms"
Waiting rooms in railway stations and similar occupancies				Same as for "Lobbies in club houses and hotels"
Waiting rooms,		5		No requirements
except in railway stations and similar occupancies	5			S 1.0 and E 1.0
Wards				Same as for "Dormitory rooms"
Waste paper baling rooms				Same as for "Packing rooms"
Work		5		No requirements
shops	5			S 1.0 or E 1.0
				See note No. 2 and note No. 5 at end of table
X-ray operators' rooms				Same as for "Offices"

Where, in the foregoing table, requirements for room purposes are stated as "No requirements," rooms or spaces used for the designated purposes shall be subject to all general provisions applicable thereto.

The minimum quantity of air supplied to or exhausted from a room shall be fifty cubic feet per minute.

Note No. 1. Cab stands for cabs using internal combustion engines.

If driveways and other apertures open directly to atmosphere said apertures having an area not less than twenty per cent of the floor area of the cab stand—No requirements.

If apertures have an area of less than twenty per cent of the floor area of the cab stand—same as for "Passages (enclosed), for vehicles using internal combustion engines."

Note No. 2. In rooms or apartments of any factory, mercantile establishment, mill, or workshop, the requirements given in the foregoing table shall be increased, if necessary, to conform to the following:

Rooms in which the total area of outside windows and doors is not less than twelve and one-half per cent of the floor area and in which the air space per person employed therein is not less than two thousand cubic feet—No requirements.

Rooms in which the total area of outside windows and doors is not less than twelve and one-half per cent of the floor area and in which the air space per person employed therein is less than two thousand cubic feet and more than five hundred cubic feet—S 25 per second employed.

Rooms in which there are no outside windows or doors:

Rooms in which there are no outside windows or doors; rooms having less than two thousand cubic feet of air space per person employed therein and in which the area of outside windows and doors is less than twelve and one-half per cent of the floor area, and rooms having less than five hundred cubic feet of air space per person employed there—S 30, per person employed.

Note No. 3. Passages (enclosed) for vehicles using internal combustion engines.

If openings, each having an area not less than twenty-five per cent of the cross-sectional area of the passage, are provided to atmosphere in both end walls of the passage—Natural ventilation.

If openings having a combined area not less than fifty per cent of the area of a side wall of the passage, uniformly distributed, are provided to atmosphere—Natural ventilation.

Note No. 4. Picture projection rooms.

The ventilating system exhausting from a picture projection room shall be independent of any other system, except that if the projection room is one of the rooms in a projection block, the system may serve the entire block.

The system which exhausts from the picture machine housings shall be equipped with an independent fan which discharges directly out-of-doors or to the fan discharge of any other ventilating exhaust system, if such system is so arranged that the air cannot be recirculated.

The natural exhaust outlet from a picture projection room containing one machine shall be in the ceiling of the room; the natural exhaust duct shall be carried to the atmosphere in an upward direction only and as nearly vertical as possible.

Dampers in the ducts, if any, shall be arranged to open automatically in case of fire within the room.

Note No. 5. Work shops.

When the work in the room is of such a character that dangerous or noxious dust or fumes are given off, the requirements, as stated, shall be supplemented by local exhaust sufficient to remove such dust or fumes.

The ventilating requirements for rooms used for purposes similar to those enumerated in the foregoing table but not specifically named therein, shall be the same as those for room purposes of similar character.

Note No. 6. Loading spaces and appurtenant driveways.

Loading spaces and appurtenant driveways in manufacturing and storage units having apertures opening directly to atmosphere, said apertures having an area of not less than 20% of the floor area of the loading spaces and appurtenant driveways—Natural ventilation.

If the apertures have an area of less than 20% of the floor area of the loading spaces and appurtenant driveways—E. 5. [Amend. Coun. J. 12-21-39, p. 1396; 11-6-40, p. 3432.]

81-8. If the air conditions in any habitable room become objectionable due to causes other than occupancy by human beings and the board of health finds that the health and comfort of the human occupants is endangered thereby, additional ventilation by natural or mechanical means, approved by the board of health, shall be provided.

81-9. The air supply for every ventilating system, either natural or mechanical, shall be taken directly from out-of-doors, except that

(a) When air is supplied by a mechanical ventilating supply system, a portion of the required air supply may be recirculated provided the system is equipped with such devices for the control of temperature, humidity and dust content in the spaces to be ventilated that the physical properties of the air so supplied are substantially the same as though all of the supply were taken from out-of-doors. The quantity so recirculated may be considered as exhaust from the rooms from which it is withdrawn. The quantity of air withdrawn from any room and recirculated shall not exceed sixty-six and two-thirds per cent of the air supplied to the room by the ventilating system. All equipment shall be so arranged that at least fifty per cent of the air supplied by the system can be taken from out-of-doors. The fresh air intake shall be so arranged that at least one hundred per cent of the air supplied by the system can be taken from out-of-doors;

(b) When air is supplied by a mechanical ventilating supply system which is not equipped with devices prescribed in paragraph (a), a portion of the air supplied may be recirculated during the time that the rooms are not occupied. The quantity of air so recirculated shall not exceed sixty-six and two-thirds per cent of the air normally supplied by the ventilating system. The intake and all equipment and ducts shall be so arranged that all of the air supplied by the system can be taken from out-of-doors, and that the air permitted to be recirculated as herein described, can be discharged to the atmosphere when the rooms are occupied;

(c) When air is supplied by a mechanical ventilating supply system, either with or without recirculation, a secondary intake may be provided, taking air indirectly from out-of-doors through an underground tunnel or other construction which has a sufficient number of openings to the outer air to provide an adequate supply of fresh, uncontaminated air. The main intake shall be so arranged that it will supply all the fresh air required for the systems; the quantity of air that can be taken through the secondary intake shall not exceed that which can be taken through the main intake. Provision shall be made so that the secondary intake can be closed tight and the full quantity of air required can be taken through the main intake;

(d) The intake drawing air from out-of-doors shall be at such a point that the air supply will be uncontaminated and that the openings will be unobstructed at all times. The intake opening shall be not less than fifteen feet from the discharge outlet of any exhaust fan, and, unless adequate means is provided for the removal of dust from the air, the bottom of the opening shall be not less than ten feet above the surface of any abutting public way, gangway, driveway, grade, or abutting roof. No intake opening shall be placed in a horizontal position in any sidewalk, or in the pavement of any street, alley, or driveway, or level with any other surrounding grade nor so as to take air from the lower level of any two level street or similar construction;

(e) No air exhausted from bath, toilet, urinal, or similar room, lavatory, locker, coat room, kitchen, boiler room, or other room in which such air might be contaminated by smoke, gases, or dust which might be noxious, dangerous, or detrimental to health shall be recirculated at any time.

81-10. The air inlets and outlets in every system of ventilation, either natural or mechanical, shall be so located and constructed as to insure, when said systems are properly operated, circulation of air throughout each room; reasonable precaution shall be taken in the design and installation of the system to prevent the air from striking the occupants of the room under such conditions of direction, temperature or velocity as to cause discomfort.

If a mechanical ventilating supply system only is installed for a room, or if a greater quantity of air is supplied by a mechanical ventilating supply system than is removed by a mechanical ventilating exhaust system for a room, adequate means shall be provided for the natural exit of the excess air supplied. If a mechanical ventilating exhaust system only is installed for a room or if a greater quantity of air is removed by a mechanical ventilating exhaust system than is supplied by a mechanical ventilating supply system for a room, adequate means shall be provided for the natural supply of the deficiency in the air supplied.

Openings for natural ventilation shall be adjustable and located in both upper and lower portions of the room. A window having adjustable openings in the upper and lower portions shall be considered as complying with this requirement.

81-11. The air removed by every mechanical ventilating exhaust system shall be discharged out-of-doors at a point where it will not cause a nuisance, and from which it cannot again be readily drawn in by a ventilating system, excepting that:

Air which is to be used for recirculation may be discharged to a supply system;

Air which will not cause a nuisance may be discharged into a boiler room in such quantity as is required to supply the needs of combustion.

81-12. Mechanical ventilating exhaust systems for bath, toilet, urinal, and similar rooms shall be independent from those for rooms of other character, except that:

Exhaust ducts from janitors' closets containing slop sinks or similar fixtures may be connected to and made a part of toilet room systems;

Exhaust ducts from private bath, toilet, and urinal rooms and from isolated public rooms of the same nature may be connected to and made a part of the exhaust system for rooms of other character or exhaust ducts from rooms other than bath, toilet, and urinal rooms may be connected to and made part of the exhaust system for toilet rooms, provided:

(a) That the exhaust fan for the system is in operation all of the time that the building is occupied;

(b) That the branch duct from each bath, toilet, or urinal room or group of such rooms shall be run parallel and adjacent to the duct from other rooms for a distance of not less than five feet within which distance there are no exhaust openings in either duct and the connection between the ducts made with an easy curve having its outlet toward the exhaust fan, and

(c) That the total quantity of air exhausted from private bath, toilet, and urinal rooms and from isolated public rooms of same nature shall not exceed ten per cent of the capacity of the fan.

81-13. If an installation is a mechanical ventilating exhaust system without a mechanical ventilating supply system, or if it is a mechanical ventilating supply system, either with or without a mechanical ventilating exhaust system, the equipment shall be installed so that the supply shall be heated to such a temperature as will provide proper conditions in the room.

The heating elements and all equipment and connections required therefor shall be based on maintaining the required conditions when the out-of-doors temperature is ten degrees below zero Fahrenheit.

81-14. The materials used in every mechanical ventilating supply system and every mechanical ventilating exhaust system shall be incombustible and of a moisture resisting character. The design and construction of all equipment and the weight and bracing of all duct work shall be such as will operate under all conditions without causing vibration. Ducts shall be substantially air tight.

Interpretation of Requirements

81-15. In rooms which are required to be provided with mechanical ventilating exhaust systems, either with or without mechanical ventilating supply systems, the fresh air to replace the air exhausted from each room shall be obtained from ventilating openings in that room, or from a mechanical ventilating supply system installed for that room, except

(a) In foyers, living quarters, lobbies, locker rooms, offices, medicine rooms, and picture galleries, it may be obtained from ventilating openings in each of said rooms; from ventilating openings in uncontaminated rooms adjacent to the designated rooms through unobstructed openings, having a total area not less than two per cent of the designated rooms, provided the area of the ventilating openings is not less than five per cent of the combined floor areas of the adjacent room and the designated room which it serves; or, from a mechanical ventilating supply system serving rooms adjacent to the designated room, either alone or in combination with the designated room, provided that there are unobstructed openings having a total area not less than one per cent of the floor area of the designated room between such adjacent rooms and the designated room, and that the quantity of air supplied to the adjacent rooms is not less than that required for both the designated room and the adjacent rooms.

If an adjacent room requires a preponderance of mechanical exhaust when the ventilating openings are not adequate for natural ventilation, or if the air in such adjacent rooms might contain dangerous or noxious dust or fumes, such rooms shall not be used as a source of supply to the designated room.

(b) In public kitchens and serving pantries it may be obtained from ventilating openings in each of said rooms; from dining rooms adjacent to the designated rooms, provided the area of the ventilating openings in the dining room is not less than five per cent of the combined floor area of the dining room and the designated room served; or, from dining rooms supplied by a mechanical ventilating supply system either alone or in combination with the designated room, provided that there are doors or other openings having a total area of not less than two per cent of the floor area of the designated room between such dining room and the designated room, and that the quantity of air exhausted from the dining room through the designated room, plus the quantity of air supplied directly to the designated room is not less than the quantity of air required to be exhausted from that room.

(c) In banking vaults in connection with banking rooms and safety depositories it may be obtained from natural ventilating openings in adjacent uncontaminated banking spaces, provided the area of the natural ventilating openings is not less than five per cent of the combined floor area of the banking spaces and the vault, or from a mechanical ventilating supply system serving the adjacent banking spaces, provided that the quantity of air supplied to the banking spaces is not less than that required for both the vault and the banking spaces.

(d) In picture projection rooms, it may be obtained from openings to uncontaminated rooms adjacent to the picture projection room, which have ventilating openings or which are provided with a mechanical ventilating supply system of the capacity required for such adjacent room.

(e) In bath, toilet, and urinal rooms, check rooms, machinery rooms, storage rooms, storage battery rooms, and other rooms of similar character, it may be obtained from ventilating openings in the rooms, or from openings to uncontaminated rooms adjacent to the designated rooms which have ventilating openings or which are provided with a mechanical ventilating supply system of the capacity required for the adjacent rooms, provided that the quantity of air supplied to the adjacent rooms is not less than that exhausted through the designated rooms.

81-16. If the installation includes an air cooling system, or if, for any other reason it is impracticable to open the ventilating openings, the ventilation requirements shall be the same as though no such openings were provided.

81-17. If a room is used for two or more room purposes, having different ventilating requirements, and it is possible to determine the space which will be used for each purpose, each such space may be considered as a separate room and ventilated in accordance with the table of ventilating requirements; if it is not possible to determine the space which will be used for each purpose the entire room shall be ventilated as required for the most severe room purpose in the room.

81-18. A partition which is not more than one-half the story height of a room and which is open at both the floor and ceiling shall not be considered a partition forming an independent room, but the space on both sides of the partition shall be considered as one room. Grilles having openings of not less than seventy-five per cent free area may be placed in the openings both below and above such partitions.

Method of Determining Compliance

81-19. The air inlets of every mechanical ventilating supply system and the air outlets of every mechanical ventilating exhaust system shall be adjusted to supply or exhaust the quantities of air prescribed with approximately uniform distribution over the entire area of such inlet or outlet.

81-20. Compliance with mechanical ventilating requirements shall be determined by readings indicating the velocity of the air in feet per minute; they shall be taken with a calibrated anemometer unless the conditions surrounding the installation are not within the range of accuracy of this instrument, in which case a Pitot tube, or other device approved by the board of health shall be used.

81-21. Readings shall be taken at the openings, except where these are inaccessible or if accessible only at great hazard, and where the design or construction of the openings is such as to make it impossible to determine the free area.

81-22. Readings shall be taken by holding the anemometer close to the face of the opening and moving it at a uniform rate of speed over the entire surface of the opening. If the area of the opening is more than one hundred forty-four square inches and the velocity of air is not approximately uniform over the entire area, the opening shall be subdivided into equal areas, the longest side of which shall not exceed twelve inches and each subdivision shall be considered as an independent opening, and the average velocity of all of the subdivisions shall be considered as the velocity through the opening.

If the openings are inaccessible or if accessible only at a great hazard or if the design or construction of the openings is such as to make it impossible to determine the free area, readings shall be taken over areas as hereinbefore described through handholes placed in the branch duct behind each opening or as close as practical to the opening.

81-23. The velocity readings as indicated by the anemometer shall be corrected to conform to the calibration curve for the instrument used.

81-24. The area of openings shall be taken as the full opening in the duct if there is no grille, register face or screen over same, or the average between the gross area and the total free area of the grill, register face or screen if such is installed in the opening.

81-25. The quantities of air supplied and exhausted through openings shall be determined by multiplying the area of each opening by the corrected reading of the anemometer or other instrument used.

The sum of the quantities of air delivered at all the openings of a system shall be considered the total capacity of the fan at the speed at which readings are taken.

Operation of Ventilating Systems

81-26. Every ventilating system, either natural or mechanical, shall be kept in good repair and in operation so as to insure the required ventilation of all rooms and spaces to be ventilated thereby during all hours of human occupancy. No ventilating system shall be operated so as to cause objectionable drafts upon occupants.

The ventilating system in every garage and every passage for vehicles, using internal combustion engines, shall be operated at such times and in such a manner that the amount of carbon monoxide in the air in the garage or passage shall not exceed a maximum concentration of two parts in ten thousand parts of air.

Violation of Chapter Provisions

81-27. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 84

STEAM BOILERS AND UNFIRED PRESSURE VESSELS

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General Provisions

84-1. The following provisions shall apply to every steam boiler and every unfired pressure vessel except tanks containing only water under the pressure in the city mains. It does not apply to boilers on railroad locomotives or to boilers which are subject to federal inspection and control.

The provisions of this chapter dealing with inspections and permits shall not apply to single dwellings nor to any multiple dwelling having not more than three apartments.

84-2. The terms used in this chapter are hereby defined as follows:

Steam boiler. A device used for the purpose of evaporating water into steam under pressure, further defined as follows:

(a) *High pressure boiler.* A boiler in which steam pressure is more than fifteen pounds per square inch above atmospheric pressure. This classification is sub-divided as follows:

(1) *Miniature boiler.* A high pressure boiler, the diameter of the shell of which does not exceed sixteen inches; the length between heads of which does not exceed forty-two inches; the water heating surface of which is not more than twenty square feet and

(2) Other high pressure boilers.

(b) *Low pressure boiler.* A boiler in which steam pressure is not more than fifteen pounds per square inch above atmospheric pressure.

Unfired pressure vessel. Any tank or pressure vessel used to contain air, water, or other substance under pressure, except tanks containing only water under pressure in the city mains, unless otherwise prescribed in other sections in the building provisions of this code.

Material and Construction

84-3. The material and construction of boilers shall be in accordance with the American Society of Mechanical Engineers "Rules for the Construction of Stationary Boilers," as follows:

Section I. Power boilers, dated 1933, including addenda dated 1937.

Section II. Material specifications, dated 1933, including addenda dated 1937.

Section III. Locomotive boilers, dated 1937.

Section IV. Low pressure heating boilers, dated 1937.

Section V. Miniature boilers, dated 1937.

Section VI. Rules for inspection, dated 1937.

84-4. The material and construction of tanks and other vessels under pressure shall be in accordance with the American Society of Mechanical Engineers "Rules for the Construction of Unfired Pressure Vessels," section VIII, dated 1934, and addendum dated 1937.

Permits, Plans, Inspections, and Tests

84-5. Before any owner or agent shall proceed with the installation or alteration of any boiler or unfired pressure vessel, he shall place on file in the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants, plans and specifications of the same. Upon approval of such plans and specifications, a duplicate set of which shall be left on file in said office, and the payment of fees as hereinafter provided, said department shall issue a permit for the installation or alteration of such apparatus.

It shall be unlawful for any person to use any steam boiler, or tank, or tanks, subject to pressure, other than the pressure in the city water mains, until he shall first have procured a certificate from the chief inspector of steam boilers, unfired pressure vessels, and cooling plants that such apparatus may be safely used, and that the boiler, boiler setting, means of producing draft, smoke connections and furnace or firebox are of such size and capacity that they will do the work required.

If such owner, agent, or person using a steam boiler or tank shall fail to notify the said chief inspector of his intention to make any alteration or enlargement of such steam plant or tank, and shall fail to file plans and specifications for the enlargement or alteration of the same, and shall proceed to make such alterations or enlargement without a permit therefor, he shall be liable to a fine of twenty-five dollars for each day on which he shall have prosecuted such alteration or enlargement without said permit, and each day's violation shall constitute a separate offense.

84-6. It shall be the duty of the chief inspector of steam boilers, unfired pressure vessels, and cooling plants and his deputies to inspect all boilers, tanks, jacketed kettles, generators, or other apparatus used for generating or transmitting steam for power, or using steam under pressure for power, or using steam under pressure for heating or steaming purposes, and all other tanks, jacketed kettles, and reservoirs under pressure of whatsoever kind, except as hereinafter provided as often as once a year by making a hydrostatic pressure test where such test shall be deemed necessary; provided, however, that the hydrostatic pressure used in such test shall not exceed the maximum working pressure of such apparatus by more than fifty per cent; and by making a careful external and internal examination. In all cases where hydrostatic pressure test is used, an internal examination of such apparatus shall afterwards be made.

84-7. Any boiler, tank, jacketed kettle, generator, or reservoir having been in use eight years or more and in such condition that in the opinion of the inspector the same should be drilled in order that the exact thickness and condition may be ascertained, shall be reported to the chief inspector of steam boilers, unfired pressure vessels, and cooling plants, who shall serve the owner or agent with a written notice to show cause to the chief inspector within five days why such boiler, tank, jacketed kettle, generator, or reservoir should not be drilled. If, after the owner or agent has been heard, or at the end of five days, the chief inspector deems it necessary, then such boiler, tank, jacketed kettle, generator, or reservoir may be drilled at points near the water line, and at the bottom of the shell of the boiler, or at such other points in the boiler, tank, jacketed kettle, generator, or reservoir as the inspecting officer may direct, and the thickness of said material shall be determined thereafter at such annual inspection as the inspecting officer may deem necessary, and the steam pressure or other pressure allowed shall be governed by such ascertained thickness and general condition of boiler, tank, jacketed kettle, generator, or reservoir. The drilling and plugging of said holes shall be done at the expense of the owner.

84-8. When an inspection of a boiler or unfired pressure vessel has been made, and the same has been approved by the chief inspector or supervising mechanical engineer and chief deputy inspector of steam boilers, unfired pressure vessels, and cooling plants, the said inspector shall make and deliver to the person for whom the inspection was made, upon the payment of the required fees, a certificate of inspection together with a general description of such apparatus stating for what purpose the appliances are to be used and the pressure in pounds at which they may be safely used. This certificate shall be framed and hung in a conspicuous place in the boiler room.

84-9. It shall be the duty of the chief inspector of steam boilers, unfired pressure vessels, and cooling plants, upon an application in writing, made by any person owning, leasing or controlling the use of any boiler or unfired pressure vessel, stating that the same is out of repair or has been repaired, to examine the same when so repaired; and it shall be unlawful for any person to use any boiler or unfired pressure vessel after the same has been repaired until a certificate shall have been procured from the inspector to the effect that such repairing has been properly done and that such boiler or unfired pressure vessel may be safely used.

84-10. Any person manufacturing, or dealing in the sale or erection of boilers, unfired pressure vessels or apparatus as defined by this chapter, shall, on the sale or delivery of any such boiler, vessel or apparatus at any point or locality within the city, notify the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants, giving the name of the purchaser, his street address, and the street address to which such system is to be delivered. Any person selling a second hand or used boiler or unfired pressure vessel shall before painting the same, have it inspected by the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants, and before offering for sale any such boiler or unfired pressure vessel shall have in his possession a certificate issued by the said department to the effect that the said boiler or unfired pressure vessel is in such condition that it can be safely used. The fee for such inspection shall be the same as provided for the regular periodic inspection.

Violation of Chapter Provisions

84-11. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 85

MECHANICAL REFRIGERATION

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General Provisions

85-1. The provisions of this chapter dealing with inspections and permits shall not apply to single dwellings nor to any multiple dwelling having not more than three apartments.

85-2. The terms used in this chapter are hereby defined as follows:

Approved. Official approval by the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants.

Brine cooler. An evaporator for cooling brine in an indirect system.

Check valve. A valve allowing refrigerant flow in one direction only.

Commercial system. A refrigerating system assembled or installed in a building used for business or commercial purposes.

Compressor. A compressor is any device having one or more pressure imposing elements used in a refrigerating system to increase the pressure of the refrigerant in its gas or vapor state for the purpose of liquefying the refrigerant.

Compressor relief device. A valve or rupture member located between the compressor and the stop valve on the discharge side arranged to relieve the pressure at a predetermined point.

Condenser. A vessel or arrangement of pipe or tubing in which the vaporized refrigerant is liquefied by the removal of heat.

Direct system of refrigeration. A system in which the evaporator is located in the material or space refrigerated or in air circulating passages communicating with such space.

Emergency relief valve. A manually operated valve for the discharge of refrigerant in case of fire or other emergency.

Evaporator. That part of a system in which refrigerant is expanded or vaporized to produce refrigeration.

Flammable refrigerant. Any refrigerant which will burn when mixed with air.

Fusible plug. A device for the relief of pressure having a fusible metal that will melt at a maximum temperature of two hundred degrees Fahrenheit.

Generator. A device equipped with a heating element used in a refrigerating system to increase the pressure of the refrigerant in its gas or vapor state for the purpose of liquefying the refrigerant.

Indirect system of refrigeration. A system in which a liquid, as brine or water, cooled by the refrigerant, is circulated to the material or space refrigerated or is used to cool air applied to such space.

Indirect open spray system. A system in which a liquid, such as brine or water, cooled by an evaporator located in an enclosure external to a cooling chamber, is circulated to such cooling chamber and is sprayed therein.

Industrial system. A refrigerating system used in the manufacture, processing, or storage of materials located in a building used exclusively for industrial purposes.

Irritant refrigerant. Any refrigerant which has an irritating effect on the eyes, nose, throat, or lungs.

Liquid receiver. A vessel permanently connected to the high pressure side of a system for the storage of refrigerant.

Mixer. A vessel or device for mixing the refrigerant with another substance.

Multiple system. A system employing the direct system of refrigeration in which the refrigerant is delivered to two or more evaporators in separately refrigerated spaces.

Multiple dwelling system. A refrigerating system employing the direct system in which the refrigerant is delivered by a pressure imposing element to two or more evaporators in separate refrigerators or refrigerated spaces located in rooms of separate tenants in multiple dwellings.

Pressure limiting device. A pressure or temperature-responsive mechanism for automatically stopping the operation of the pressure imposing element at a predetermined pressure.

Pressure relief device. A pressure relief valve, a rupture member, or other approved device for relieving pressure.

Pressure relief valve. A valve held closed by a spring or other means, which automatically relieves pressure in excess of its setting.

Pressure vessel. Any refrigerant containing receptacle of a refrigerating system other than expansion coils, headers, and pipe connections.

Refrigerant. A substance used to produce refrigeration by absorbing heat in its expansion or vaporization.

Refrigerating system. A combination of parts in which a refrigerant is circulated for the purpose of extracting heat.

Remote system. A refrigeration system in which the compressor or generator is located in a space other than the cabinet or fixture containing the evaporator.

Rupture member. A pressure relief device having a diaphragm or member which will rupture or blow out at a predetermined pressure.

Sealed unit. A pressure imposing element which operates without stuffing box, or which does not depend upon contact between moving and stationary surfaces for refrigerant retention.

Shell type apparatus. A refrigerant-containing pressure vessel having tubes for the passage of a heating, cooling, or refrigerating fluid.

Ton of refrigeration. A ton of refrigeration is heat removal at the rate of twelve thousand B.T.U. per hour. Compressor capacity shall be based on five degrees evaporator temperature and eighty-six degrees condenser temperature except the capacity of a compressor when used for comfort cooling or air conditioning purposes shall be based on forty degrees Fahrenheit evaporator temperature.

Unit system. A system which can be removed from the user's premises without disconnecting any refrigerant-containing parts, water connections, or fixed electrical connections.

85-3. Existing refrigerating systems installed in accordance with the Revised Chicago Code of 1931, amendments added thereafter and ordinances enacted prior thereto and in operation previous to August 3, 1938, shall be maintained in a safe condition; and alterations, replacement, and changes shall be made in such refrigerating systems, when, due to deterioration, wear and tear, such refrigerating systems have become or are likely to become dangerous to public health or public safety.

85-4. Spaces subject to limitations as to the type of equipment and the kind and amount of refrigerant permitted, which adjoin horizontally or vertically a space having greater restrictions and are not separated therefrom by a floor or wall having no openings, shall be subject to the greater restrictions.

85-5. It shall be the duty of the person in charge of the premises wherein any refrigerating system is located to exercise due diligence to see that the refrigerating system is properly maintained and operated at all times.

Two gas helmets or masks suited to the refrigerant used shall be provided with every class A system and with every class B system that operates above atmospheric pressure except when carbon dioxide is used.

Every gas helmet or mask shall be of a type approved by the chief inspector of the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants as being suitable for the refrigerant used, shall be inspected annually by said chief inspector, and shall be kept in operative condition in an easily accessible case or cabinet located outside of the entrance to the machinery room.

Whenever the losses of refrigerant from a system are such as to endanger the health or lives of the human occupants of any room or structure in which such refrigeration system, or any part thereof, is located, it shall be the duty of the owner of such refrigeration system to apply suitable pressure or other tests to prove the system tight.

Every system which may be charged after installation shall have the charging connection located on its low pressure side. No container shall be left connected to a system except while charging or withdrawing refrigerant.

Refrigerants withdrawn from refrigerating systems shall be transferred to containers as prescribed by the regulations of the Interstate Commerce Commission for the transportation of such refrigerants.

85-6. It shall be the duty of the installer or operator of any refrigerating system, except a class D and E system, to post and keep conspicuously posted as near as practicable to the pressure imposing element of such system a card giving operating directions for such system, including precautions to be observed in case of a breakdown or leak. The following shall be included in the instructions and information listed on such cards:

Instructions for shutting down system in case of emergency.

The name, address, and telephone number of every engineer or operator in charge.

The name, address, and day and night telephone number for service.

The location of the nearest fire alarm box.

The telephone number of the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants, and instructions to notify said department immediately in case of serious leakage or other emergency.

The date, amount, and kind of refrigerant placed in the system at the time of initial charging and every subsequent recharging and the name and address of the person charging or recharging the system.

Every single unit refrigerating system shall have attached in a permanent manner and in a conspicuous place within or on the refrigerated space, a metal tag or other emblem containing the following information, in legible words and figures: maker's name, kind and amount of refrigerant used, test pressures applied.

Every class A, B, C, and multiple class D system shall have the name of the refrigerant painted or affixed in a permanent manner either to the pressure imposing element or to the piping in proximity thereto. The kind of refrigerant and instructions for shutting off refrigerant shall be prominently posted at the branch valves used for shutting off each evaporator or set of evaporators contained within each refrigerated space.

Classification

85-7. Refrigerating systems shall be classified according to the total weight of refrigerant contained in or required for their proper operation.

Class A system is one containing one thousand pounds or more of refrigerant.

Class B system is one containing more than one hundred pounds but less than one thousand pounds of refrigerant.

Class C system is one containing more than twenty pounds but not more than one hundred pounds of refrigerant.

Class D system is one containing more than six pounds but not more than twenty pounds of refrigerant.

Class E system is one containing six pounds or less of refrigerant.

85-8. Refrigerants are hereby classified as follows:

Non-irritant and Non-flammable		Flammable		Irritant
Class 1	Class 2	Class 1	Class 2	
Carbon dioxide, CO_2	Dichlorodifluoromethane, CCL_2F_2	Methyl chloride, CH_3CL	Ethane, C_2H_6	Sulphur dioxide, SO_2
	Monofluorotrichloromethane, $CFCL_3$	Dichloroethylene, $C_2H_2CL_2$	Propane, C_3H_8	Ammonia, NH_3
	Dichlorotetrafluoroethane, $C_2CL_2F_4$		Isobutane, C_4H_{10}	
	Dichloromenthane, CH_2CL_2		Butane, C_4H_{10}	
			Ethyl chloride, C_2H_5CL	
			Methyl Formate, $C_2H_4O_2$	

Flammable refrigerants, or refrigerants of a poisonous nature, when used in systems containing more than six pounds of refrigerant, shall have added a substance which will impart a pungent odor or an irritating quality to the refrigerant, unless vapors are readily apparent to human sense.

Institutional Occupancies

85-9. Direct refrigerating systems shall not be placed in wards, private and operating rooms of hospitals or asylums, cell blocks of prisons, homes for infants, aged, or infirm, or any building where people are confined or are helpless, except class E unit systems containing a non-irritant and non-flammable refrigerant. Refrigerating systems installed in any such rooms or buildings shall be subject to the provisions of the following sections dealing therewith.

85-10. Direct systems wholly confined to a kitchen or laboratory may be installed in institutional occupancies; provided, however, that the system does not contain more than twenty pounds of a non-irritant and non-flammable refrigerant. Such kitchen or laboratory shall be equipped with tight-fitting self-closing doors and shall have natural or mechanical means of ventilation to the outside.

85-11. Indirect systems containing not more than two thousand pounds of a class 1 non-irritant and non-flammable refrigerant may be installed in institutional occupancies; provided, however, all refrigerating containing equipment is placed in a machinery room located on the first floor or in a basement. Such machinery room shall have tight-fitting self-closing doors and shall be provided with natural or mechanical means of ventilation.

85-12. Indirect systems operating above atmospheric pressure containing not more than three hundred fifty pounds of a class 2 non-irritant and non-flammable refrigerant may be installed in institutional occupancies; provided, however, that all refrigerant containing parts are placed in a machinery room located on the first floor or in a basement as provided above.

85-13. Indirect systems operating below atmospheric pressure containing not more than two thousand pounds of a class 2 non-irritant and non-flammable refrigerant may be installed in institutional occupancies; provided, however, that all refrigerant containing equipment is placed in a machinery room located on the first floor or in a basement as provided above.

85-14. Indirect systems containing one hundred pounds or less of class 1 or class 2 non-irritant and non-flammable refrigerant may be installed on the roof or in a penthouse; provided, however, that all refrigerant containing parts are placed in a machinery room having tight-fitting self-closing doors and provided with natural or mechanical means of ventilation.

Industrial Systems

85-15. A refrigerating system used in the manufacture, processing, or storage of materials located in a building used exclusively for industrial purposes shall be classified as an industrial system. Industrial systems may be located without restriction in separate buildings, groups of buildings, or separate sections of buildings, subject to the following sections dealing therewith.

85-16. In industrial systems, the pressure imposing element, receiver, and shell type apparatus of class A systems except brine or water cooler, connecting pipes, and evaporators shall be placed in a ventilated machinery room.

85-17. No class A industrial system using a flammable refrigerant shall be permitted unless the entire building is of fireproof construction; no class B system using such a refrigerant shall be permitted unless the machinery room is of fireproof construction.

85-18. Machinery rooms of class A industrial systems using an irritant or flammable refrigerant shall have two exits, one leading directly to the outside.

85-19. If an irritant or flammable refrigerant is used in a direct industrial system, the number of workmen shall not exceed one for each one hundred fifty square feet of floor area on the floors above the first, or ground level.

85-20. Industrial systems containing flammable class 2 refrigerants shall be limited to ten pounds of refrigerant except in industries engaged in the manufacture and liquefication of flammable gases.

85-21. In all details other than those covered in the preceding sections of this chapter dealing therewith, industrial systems must conform to the provisions contained in other sections in the building provisions of this code.

Commercial Systems

85-22. A refrigerating system assembled or installed in a building used for business or commercial purposes shall be classified as a commercial system.

Class 2 flammable refrigerants shall not be permitted in any installation.

85-23. Commercial systems shall be limited on the basis of occupancy and location as provided in the following sections of this chapter dealing with places of public assembly and commercial systems for other occupancies.

In all other details direct and indirect systems must conform to the provisions contained in other sections of this code.

85-24. Refrigerating systems installed in rooms or buildings for public assembly, for example, auditoriums, theaters, dance halls, exhibition halls, schools (except laboratories used for teaching refrigeration), court houses, churches, entrances and exits of business units, and all similar occupancies except eating places, shall be subject to the following limitations:

Unit systems containing a non-irritant or non-flammable refrigerant may be used in such locations.

Direct systems wholly confined to a kitchen may be installed; provided, however, the system does not contain more than twenty pounds of non-irritant and non-flammable refrigerant. Such kitchen shall be equipped with tight-fitting, self-closing doors and shall have natural or mechanical means of ventilation.

All other refrigeration in the above locations must be supplied by the indirect system of refrigeration, except as permitted in those sections of this chapter dealing with refrigeration in connection with air conditioning with the entire refrigerant containing equipment placed in a machinery room. These systems shall be subject to the following provisions:

(a) If an irritant or class 1 flammable refrigerant is used, the system shall not contain over five hundred pounds of refrigerant and the entire refrigerant-containing equipment shall be placed in a machinery room devoted to no other purpose, located on the first floor or basement. This room shall be separated from other parts of the building by solid construction having a four hour fire-resistive value and there shall be no direct means of communication between such room and any other portion of the building. The entrance or exit of such room shall be located in an outside wall but not in a wall forming a part of the enclosure of an exit court.

(b) If a class 1 or class 2 non-irritant and non-flammable refrigerant is used, the machinery room shall be provided with natural or mechanical means of ventilation directly to the outside and shall be equipped with self-closing tight-fitting doors. Such systems when installed above the first floor shall be limited in quantity to three hundred pounds of refrigerant.

85-25. Direct refrigerating systems installed in retail stores, restaurants, wholesale stores, beauty parlors, barber shops, offices, sales rooms, manufacturing spaces, and all similar occupancies shall be installed subject to the following provisions:

(a) Systems containing a class 1 non-irritant and non-flammable refrigerant shall be limited in refrigerant content to not more than one pound for each one hundred cubic feet by volume in the total space, and the total refrigerant content in such system shall not exceed two thousand pounds.

(b) Systems containing a class 2 non-irritant and non-flammable refrigerant shall be limited in refrigerant content to not more than one pound for each fifty cubic feet by volume of total space and the total refrigerant content in such systems shall not exceed three hundred and fifty pounds.

(c) The compressor, condenser and shell type apparatus of systems, containing more than one hundred pounds of refrigerant shall be placed in a machinery room with natural or mechanical means of ventilation directly to the outside, and shall be equipped with self-closing tight-fitting doors.

(d) Systems containing class 2 non-irritant and non-flammable refrigerant shall not be located in a space in which there is apparatus to produce an open flame, unless such space is provided with means of adequate mechanical ventilation or the apparatus for producing the open flame is vented by means of a hood, so as to carry the products of decomposition to the outside atmosphere. Flames made by matches, cigarette lighters, small alcohol lamps, and similar devices shall not be considered as open flames.

(e) Systems containing not more than two hundred pounds of an irritant or class 1 flammable refrigerant may be installed in manufacturing portions of a commercial building normally frequented by employes only; provided, however, that where the system contains over fifty pounds of refrigerant, the compressor, condenser, and shell type apparatus shall be placed in a machinery room with natural or mechanical ventilation and openings to other rooms be fitted with close-fitting self-closing doors.

(f) Systems containing not more than one hundred pounds of an irritant or class 1 flammable refrigerant may be installed on the first floor or in the basement of buildings where the public is permitted, except commercial residential buildings; provided, however, that where systems contain over fifty pounds, the compressor, condenser, and shell type apparatus shall be placed in a machinery room with natural or mechanical ventilation and openings to other rooms fitted with tight-fitting, self-closing doors. The first floor of buildings shall have required exits, opening directly out of doors or through corridors or other horizontal means of exit directly to an outside exit doorway.

(g) Systems containing fifty pounds or less of an irritant or class 1 flammable refrigerant may be installed on any floor above the first floor of commercial buildings where the public is permitted, except that unit systems only may be used in retail stores, restaurants, and other locations where the number of employes serving the public exceed ten.

(h) Systems containing fifty pounds or less of an irritant or flammable refrigerant may be installed in the basement or on the first floor only of multiple use buildings containing dwellings; provided, however, that the compressor, condenser and shell type apparatus of such systems containing more than twenty-five pounds shall be located in the machinery room. Such machinery room shall have natural or mechanical means of ventilation and shall be fitted with tight-fitting, self-closing doors.

85-26. Indirect systems may be installed in retail stores, restaurants, wholesale stores, beauty parlors, barber shops, offices, sales rooms, manufacturing spaces and all similar occupancies subject to the following limitations:

(a) Systems containing a non-irritant and non-flammable refrigerant may be installed in a basement or on the first floor; provided, however, all refrigerant-containing parts of a system containing more than one hundred pounds of refrigerant are installed in a machinery room having natural or mechanical means of ventilation. Such machinery room shall be equipped with tight-fitting, self-closing doors.

(b) Systems containing five hundred pounds or less of a non-irritant and non-flammable refrigerant may be installed between the first floor and the roof; provided, however, all refrigerant-containing parts of such system are installed in a machinery room having natural or mechanical ventilation. Such machinery room shall be equipped with tight-fitting, self-closing doors.

(c) Systems containing more than three hundred pounds of non-flammable and non-irritant refrigerant may be installed above the roof; provided, however, all refrigerant-containing parts are located in the machinery room. All openings from such machinery room shall be made to the outside and shall not be located adjacent to the entrance or exit of any stairway, elevator shaft or fresh air intake.

(d) Systems containing an irritant or a class 1 flammable refrigerant may be installed subject to the limitations as to quantity of refrigerant and location as required for direct system.

(e) Indirect systems containing a flammable or irritant refrigerant in quantities greater than that permitted for direct systems may be installed; provided, however, that they do not contain more than five hundred pounds of refrigerant; and provided, further, that all refrigerant-containing parts of the system are placed in a machinery room located on the first floor or basement. Such machinery rooms shall be separated from other parts of the building by solid construction having four hour fire-resistive value and there shall be no direct means of communication between such room and other portions of the building.

Multiple Dwelling Systems

85-27. No multiple dwelling system shall contain over fifty pounds of sulphur dioxide, fifty pounds of methyl chloride, or one hundred pounds of a class 1 or class 2 non-flammable refrigerant. All other refrigerants listed in the refrigerant classification section are prohibited in multiple dwelling systems.

85-28. No evaporator shall be placed in a sleeping room.

No evaporator shall be placed in a room having adjoining rooms, the combined cubical contents of which has less than four thousand cubic feet and any part of which is used for sleeping purposes, unless such rooms are provided with a window or windows the total window area of such being not less than forty per cent of the floor area of such rooms. And unless such window, or windows, shall open to the outside air and be so constructed that at least one-half of such window, or windows, can be readily opened.

85-29. Shut-off valves for multiple dwelling systems shall be installed at the following locations:

(a) In each branch liquid and suction line at or near compressor.

(b) At the bottom of each riser or manifold connection of any riser or any branch connecting manifold extending over forty feet in length.

(c) At each service outlet in liquid and suction lines.

These valves shall be fitted with a hand wheel as a means of ready operation, and shall be located outside of the refrigerating unit and at such distance above the floor as will provide ready accessibility.

Such valves, where located in living quarters, shall be placed in a metal box or other suitable enclosure and shall be rigidly attached thereto or to the supports thereof. Every such outlet box shall have an accessible door or removable cover.

85-30. Not more than one refrigerator shall be connected to one outlet box in multiple dwelling systems.

Every such outlet box shall be located within the premises containing the refrigerator and not within the refrigerated space.

No outlet box shall be located in any hallway, stairway, or vertical shaft.

85-31. Service valves shall be installed in both connections to every multiple dwelling system evaporator of the flooded type that can be removed from the refrigerator as a unit in such manner as to permit the removal of the evaporator with valves attached.

85-32. Every evaporator of a multiple dwelling system, unless constructed of material of sufficient strength to prevent injury in the ordinary and customary use thereof, shall be protected by a suitable shield to assure protection against such injury.

Every evaporator shall be firmly anchored or secured in such a manner as to make it rigid.

85-33. Every refrigerator cabinet, box or refrigerated space of a multiple dwelling system, containing any evaporator, using the direct system of refrigeration shall be firmly and securely anchored and fixed to a wall, floor or other fixed object in such manner as to hold such refrigerator box or casing securely in place.

85-34. Compressors, condensers and shell type apparatus of multiple dwelling systems shall be located in a machinery room provided with natural or mechanical ventilation or in an accessible part of the basement not used for habitation, workshop or laundry purposes; provided, however, that where compressors are not located in a machinery room they shall be protected by the use of heavy wire netting secured to metal posts or two by four wooden studding and shall not be located under stairways or near dumbwaiters or elevator shafts.

85-35. In all other details such multiple dwelling systems must conform to the provisions contained in other sections in the building provisions of this code.

Unit Systems

85-36. A unit system is hereby defined as one which can be removed from the users' premises without disconnecting any refrigerant-containing parts, water connections or fixed electrical connections. Unit systems may be installed subject to the limitations set forth in the following sections of this chapter dealing therewith.

85-37. Unit systems containing an irritant or flammable refrigerant shall not be placed in:

(a) Wards or private rooms of hospitals, sleeping quarters of asylums, cell blocks of prisons or any building where persons are confined or helpless.

(b) Rooms or buildings for public assembly, for example, auditoriums, theaters, dance halls, exhibition halls, schools (except laboratories for teaching refrigeration), court houses, churches, and entrances and exits of business units.

(c) Sleeping rooms.

85-38. Unit systems containing not more than six pounds of a non-flammable or non-irritant refrigerant may be installed in any location.

85-39. Unit systems containing more than six pounds of non-flammable and non-irritant refrigerant may be installed in any location except wards or private rooms of hospitals, sleeping quarters of asylums, or any room or building where persons are confined or helpless.

85-40. No unit system may be installed in any location unless the room is adequately ventilated to the outside air and unless sufficient clearance is provided to make them accessible.

85-41. Unit systems unless so constructed that they will not burst due to the expansion of the refrigerant when subjected to an abnormal outside temperature, such as that created by fire, shall be protected by a pressure relief device as follows:

(a) Safety valves, if used, shall be one-fourth inch in size.

(b) Rupture members, if used, shall have an opening at least one-sixteenth inch in diameter.

(c) Fusible plugs, if used, shall have a maximum fusing point of two hundred degrees Fahrenheit and a free opening of one-sixteenth inch in diameter.

(d) Unit systems employing an air cooled condenser and containing not more than six pounds of refrigerant, may have the discharge from the pressure relief device piped into the low pressure side of system; provided, however, that the volume of the low pressure side of system, excluding the compressor crank case, is capable of holding the entire refrigerant charge of the system.

85-42. Every evaporator, unless constructed of sufficient strength to prevent injury in the ordinary and customary use thereof, shall be protected by a suitable shield to assure protection against such injury. In all other details other than those specified in the preceding sections of this chapter dealing therewith, unit systems must conform to the provisions contained in other sections in the building provisions of this code.

Refrigerating in Connection With Air Conditioning

85-43. Refrigerating systems used in connection with the control of temperature or humidity of air in or circulated to space, or spaces, occupied by people, or where used for comfort cooling, shall be subject to the requirements dealing therewith set forth in the following sections of this chapter.

85-44. Direct systems in which the refrigerant is circulated through coils or evaporators located in the path of the air used for air conditioning may be installed for air-conditioning purposes subject to the limitations set forth in the following sections dealing therewith.

85-45. Where a class 1 non-irritant and non-flammable refrigerant is used in a direct system as provided in section 85-44, the following provisions shall apply:

(a) The refrigerant content of the system shall not exceed one pound for each one hundred cubic feet of volume in total space to be cooled and the total refrigerant content shall not exceed two thousand pounds.

(b) Non-corroding material shall be used in coils unless permanent protection against corrosion is provided.

(c) Coils or coolers shall be tested to the test pressure specified for the refrigerant; provided, however, the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants may accept from the manufacturer a certified copy of test report showing that tests of said apparatus, as required by this code, were made at the place of manufacture.

85-46. Where a class 2 non-irritant and non-flammable refrigerant is used in a direct system as provided in section 85-44, the following provisions shall apply:

(a) The refrigerant content of the system shall not exceed one pound for each fifty cubic feet of volume of total space to be cooled and the total refrigerant content shall not exceed three hundred fifty pounds.

(b) Any joint or connection in the refrigerant-containing part of the system shall be threaded, welded, brazed, sweated or of such other type of construction as approved by the department.

(c) No expansion valve or connection thereto shall be located in a ventilating system.

(d) No joint or connection shall be located in air stream except connections to coil headers may be located in air stream; provided, however, such connections are welded, brazed, or sweated and one and one-half times the pressure specified for this refrigerant is applied in the presence of the inspector.

(e) Coils or coolers shall be tested to one and one-half times the test pressure specified for the refrigerant; provided, however, the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants may accept from the manufacturer a certified copy of test report showing that tests of said apparatus, as required by this code, were made at the place of manufacture.

(f) Refrigerating system shall not be located in a space in which there is apparatus to produce an open flame unless such space is provided with means of adequate mechanical ventilation, or the apparatus for producing the open flame is vented by means of a hood so as to carry the products of decomposition to the outside atmosphere. Flames made by matches, cigarette lighters, small alcohol lamps, and similar devices shall not be considered as open flames.

(g) In every refrigerating system containing twenty-five pounds of class 2 non-irritant and non-flammable refrigerant there shall be provided a single level signal device or such other means as will produce a signal sufficient to attract the attention of the person responsible for the operation of such equipment, in case of refrigerant loss from the refrigerating system during operation, of a predetermined amount according to the following schedule:

Less than eight ton capacity (air conditioning rating) ten pounds.

Eight to fifteen ton capacity (air conditioning rating) fifteen pounds.

Above fifteen ton capacity (air conditioning rating). Permissible loss shall not exceed fifteen pounds plus one pound for each ton capacity of the system in excess of fifteen tons.

85-47. Where evaporators are located in apartment or hotel rooms used for sleeping purposes or in ducts leading thereto, direct refrigerating systems for air conditioning shall be limited to fifty pounds of a class 1 or 2 non-irritant and non-flammable refrigerant; provided, however, that the total refrigerant content of the system shall not exceed one pound for each one hundred cubic feet of volume in total space to be cooled. The evaporators of such systems shall be subject to the provisions specified in sections 85-45 and 85-46.

85-48. Where an irritant or class 1 flammable refrigerant is used in a direct system as provided in section 85-44, the system shall be limited to industrial locations and shall be subject to the following provisions:

(a) The number of employes shall not exceed one for every two hundred square feet of floor area of the space to which the air is circulated.

(b) The coils or evaporators shall be constructed of non-corroding materials or permanent protection against corrosion provided.

(c) All joints in the evaporators or connections thereto located in the air stream shall be welded and subjected to a pressure of one and one-half times the test pressure specified for the refrigerant.

(d) Unit coolers used in connection with air conditioning systems serving one room may be used; provided, however, that where an irritant or flammable refrigerant is used the number of workmen shall not exceed one for each one hundred fifty square feet of floor area on the floors above the first or ground level.

85-49. Indirect systems may be installed for air conditioning subject to the following limitations:

(a) All such systems shall be subject to the limitations for institutional occupancies or industrial systems or commercial systems as they may apply.

(b) Systems in multiple dwellings shall not contain more than three hundred fifty pounds of a class 2 non-flammable and non-irritant refrigerant; provided, however, that where the system contains over one hundred pounds, refrigerant-containing parts shall be placed in a machinery room with tight walls and natural or mechanical ventilation directing to the outside and with tight-fitting, self-closing doors.

(c) Liquids cooled by an irritant or flammable refrigerant shall not be used in a spray system to cool the air except in manufacturing units.

85-50. In all other details not covered by the preceding sections of this chapter dealing directly therewith, refrigerating systems in connection with air conditioning must conform to the provisions contained in other sections in the building provisions of this code.

Construction and Installation

85-51. All materials used in the construction and installation of refrigerating systems shall be suitable for the refrigerant used and no material shall be used that will deteriorate due to the chemical action of the refrigerant or the oil, or the combination of both.

Every part of a refrigerating system shall be designed, constructed, and assembled to withstand safely and without injury the following required test pressures:

Test Pressures in Pounds Per Square Inch

Refrigerants	Symbol	Test pressure
Carbon dioxide	CO_2	1500
Ethane	C_2H_6	1100
Propane	C_3H_8	325
Ammonia	NH_3	300
Dichlorodifluoromethane	CCL_2F_2	235
Methyl chloride	CH_3CL	215
Sulphur dioxide	SO_2	170
Isobutane	C_4H_{10}	130
Butane	C_4H_{10}	90
Dichlorotetrafluoroethane	$C_2CL_2F_4$	80
Ethyl chloride	C_2H_5CL	60
Methyl formate	$C_2H_4O_2$	50
Dichloroethylene	$C_2H_2CL_2$	50
Trichloromonofluoromethane	CCL_3F	50
Dichloromethane	CH_2CL_2	30

Where the low pressure side of class A systems are protected by a safety valve, the test pressure shall be twice the pressure at which the safety valve is set.

Castings used in the manufacture of compressors and other parts of refrigerating systems shall be of sufficient thickness and close-grain structure to prevent porosity.

85-52. The material and construction of liquid receivers, shell condensers, shell coolers, shell evaporators, absorbers, and all other pressure vessels used in refrigerating systems shall be in accordance with the American Society of Mechanical Engineers Code for Unfired Pressure Vessels, dated 1937.

Liquid receivers of direct systems used for air conditioning and for multiple dwelling systems, except those using class 1 non-irritant and non-flammable refrigerant, shall be of sufficient capacity to contain the total charge of refrigerant. Eighty per cent of the net content of shell and tube condenser can be considered as liquid receiver capacity.

Every liquid receiver, shell, and tube condenser must be equipped with means of readily determining the refrigerant content therein.

85-53. Refrigerant-containing parts of coils shall have not less than thirty-four one-thousandths of an inch wall thickness for tubing sizes three-fourths inch outside diameter or smaller. For outside diameters over three-fourths inch the wall thickness shall be increased in the ratio of the new diameter to three-fourths inch.

Unless coils are constructed of a non-ferrous metal they shall be protected against corrosion by an approved process. All connections shall be welded or brazed. Solder used for brazing shall have a melting point of at least one thousand degrees.

85-54. No refrigerant lines shall be located in any elevator, dumbwaiter, or other shaft containing moving objects.

85-55. (a) Standard weight steel or wrought iron pipe may be used for working pressures not exceeding one hundred fifty pounds for pipe sizes two inches and over.

(b) Extra heavy steel or wrought iron pipe shall be used for all pipe one and one-half inch and under.

(c) Extra heavy steel or wrought iron pipe shall be used for all pipe sizes two inches and over for working pressures exceeding one hundred fifty pounds.

(d) Pipe joints may be screwed, flanged, or welded. Screw joints shall conform to the American Standard Association pipe thread, standard No. B-2-1919. Exposed threads shall be tinned or otherwise coated efficiently to inhibit corrosion.

(e) Flanges may be screwed or welded to pipes. All flange fittings shall be of the recess gasket type. Flange bolts shall project through nuts.

(f) Welds may be made by the fusion process, both actylene and electric arc. Pipe may be butt end welded by the electric resistance process. All welding shall be in accordance with the standards issued by the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants.

(g) No cast metal fittings, except steel, semi-steel malleable iron or bronze shall be used.

(h) Reducing fittings shall be used for one or more pipe size reductions.

(i) No bends exceeding ten degrees, made at place of installation, shall be made in standard butt welded pipe. All bends exceeding ten degrees which shall have a center radius of not less than six pipe size diameters shall be not less than extra heavy pipe. Bends shall be substantially circular and free from wrinkles and kinks.

(j) Piping shall be supported to prevent excessive vibration and strain at joints or connections by hangers or braces of solid wrought iron or steel, not less than one by one-eighth inches cross-section. And for horizontal lines, shall be spaced not farther than eight feet apart.

(k) Seamless steel tubing, if used, shall conform to the thicknesses for standard and extra heavy pipe.

85-56. Seamless soft copper tubing may be used provided:

(a) Systems contain not over one hundred pounds of refrigerant.

(b) Tubing does not exceed five-eighths inch in diameter nor is less than thirty-four one-thousandths of an inch in wall thickness.

(c) Copper tubing is enclosed in iron pipe or tubing or other rigid metal enclosures, except flexible metal enclosure may be used at bends or terminals if not exceeding six feet in length.

(d) No enclosure shall be required for connections between compressor, condenser, or other shell type apparatus and nearest riser box; provided, however, that such connections do not exceed six feet in length and are located within the refrigerating machinery room.

(e) Every opening from or into an enclosed conduit for refrigerant lines shall be free from sharp edges which might injure tubing.

(f) Flared, flanged, or soldered joints may be used in connections.

(g) All valves and fittings, except those on the evaporator and at compressor, and all connections of tubing shall be arranged in or on a metal box or other suitable enclosure and shall be rigidly attached thereto or to the supports thereof. Every such box or enclosure shall have an accessible door or removable cover.

(h) Piping shall be supported by hangers or other supports so as to sustain a weight of two hundred pounds applied at the point of support.

(i) Fittings shall be of forged brass or wrought copper.

(j) No tubing joint shall be placed in conduit.

(k) Flexible metal enclosures, where used, shall be constructed of a nonferrous material.

85-57. Hard copper pipe may be used without being enclosed on conduit, provided:

(a) Pipe shall conform to the following thicknesses:

Nominal pipe size (inches)	Decimal equivalent of wall thickness
¼	.065
⅜	.065
½	.065
¾	.065
1	.065
1¼	.065
1½	.072
2	.083
2½	.095
3	.109
3½	.120

Note: The outside diameter of nominal size pipe is one-eighth inch larger than the pipe size shown above.

(b) Pipe shall be made from copper having a purity of at least 99.90 per cent, as determined by electrolytic assay, silver being counted as copper. It shall be free from cuprous oxide, as determined by a microscopic examination at a magnification of seventy-five diameters.

(c) Pipe shall have a tensile strength ranging from thirty-six thousand pounds per square inch to not more than forty-three thousand pounds per square inch and shall be legibly marked with manufacturer's trade mark and symbol on each length of tubing for the purpose of identification.

(d) Connections shall be made by the sweated type fittings and solder used shall be made of clean, unused metals having a melting point of not less than four hundred degrees Fahrenheit and not more than five hundred degrees Fahrenheit.

(e) Fittings shall be of forged brass, wrought copper, or bronze.

(f) Pipe shall be supported by solid hangers spaced not more than eight feet apart and hangers so placed that no soldered joints shall be under tension. Vertical risers shall be supported at each floor and at base of riser.

85-58. Stop or service valves shall be provided on systems in accordance with the following schedule:

	Class of system					
Location of valves	A	B	C	D	E	
Compressor, generator, or other pressure imposing device	X	X	X	X	X	
Condenser	X	X	Outlet	Outlet		
Liquid receiver	X	X	Outlet	Outlet	Outlet	
Dry evaporator	X	X	Inlet	Inlet		(See note)
Flooded evaporator	X	X	X	X	X	
Branch headers	X	X				(See note)

Where X is shown in the above schedule valves shall be provided on inlet and outlet refrigerant connections.

In a class C and class D system having two or more evaporators in separately refrigerated spaces valves will be required on both inlet and outlet of evaporator.

Where branch headers are used on a class C or D system with two or more evaporators located in separately refrigerated spaces valves shall be required on the inlet and outlet of the branch headers.

Safety Devices

85-59. Refrigerating systems normally operated above atmospheric pressure shall be equipped with safety devices according to the following table:

	Non-Flammable and non-irritant										Irritant or flammable refrigerants				
Safety device location and venting	Class 1 System class					Class 2 System class					System class				
	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
Pressure limiting device	X	X	X	X		X	X	X	X		X	X	X	X	
Pressure vessel relief device	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Vent to atmosphere	X	X				X	X	X	X		X	X	X	X	X
Compressor or other pressure imposing element relief device	X	X	X			X	X	X			X	X	X		
Emergency relief valve	X					X	X				X	X			
Discharge check valve						X					X	X			
Quick closing suction valve						X					X	X			

85-60. No connection shall be made from a refrigerating system with the public water supply which will impair the purity of the supply. Water used for removing heat from a refrigerating system shall not thereafter be used for drinking purposes. When a regulating valve is used it shall be connected between compressor or condenser and city water supply.

85-61. Shell type apparatus for refrigerating systems such as condensers, liquid receivers, evaporators, liquid separators and absorbers, shall be equipped with an approved pressure relief device set at a pressure not to exceed the pressure for which the vessel is designed. The inlet size of these relief devices shall be based on the refrigerating capacity for which the pressure vessel is designed and shall be sized in accordance with the following table:

Refrigerating capacity	Relief device pipe size (inches)
Up to 15 tons	3/8
16 tons to 30 tons	1/2
31 tons to 60 tons	3/4
61 tons to 100 tons	1
101 tons to 175 tons	1 1/4
176 tons to 250 tons	1 1/2
251 tons to 450 tons	2
451 tons to 900 tons	2

The discharge connection from these relief devices shall be equal to or greater than the inlet connection to the relief device.

A fusible plug shall not be permitted as a relief device.

85-62. Compressors on class A, B and C refrigerating systems, except those containing fifty pounds or less of non-irritant and non-flammable refrigerant shall be equipped with a pressure relief device located between the pressure imposing element and the stop valve on the discharge side. Such valves shall be set at not more than ninety per cent of the test pressure specified for the refrigerant used. Where a flammable or irritant refrigerant or a class 2 non-flammable or non-irritant refrigerant is used, this device shall be vented into the low pressure side of the system. Where a class 1 non-flammable and non-irritant refrigerant is used, this device may discharge to the atmosphere but shall be piped to discharge toward the ceiling, not less than seven feet above the floor. Systems containing one hundred pounds or more of class 1 non-flammable and non-irritant refrigerant shall be vented to outside atmosphere, or to suction side. In systems where the pressure imposing element is a compressor, the inlet pipe size of the relief devices shall be based on the gross displacement of the compressor, and shall conform to the following table:

Cubic feet per minute	Relief device size (inches)
Up to 25	3/8
26 to 100	1/2
101 to 200	3/4
201 to 350	1
351 to 580	1 1/4
581 to 850	1 1/2
851 to 1500	2

In systems where the pressure imposing element is other than a compressor, the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants shall determine the size of the relief devices to be used.

The discharge connection from these relief devices shall be equal to or greater than the inlet connection to the relief device.

85-63. Pressure limiting devices, where required for refrigerating systems, shall stop the action of the pressure imposing element at a pressure less than eighty per cent of the test pressure for the refrigerant used.

85-64. No stop valve shall be located between a pressure relief device or pressure limiting device and the part of the refrigerating system protected thereby, unless two devices of required size are used, and so arranged that only one can be shut off at any one time.

85-65. A hand operated relief valve, or other approved means for transferring refrigerant from building or buildings where an emergency condition may exist, must be provided for refrigerating systems in accordance with the table of safety devices in section 85-59.

Where a hand operated relief valve is used it shall be of two inch diameter for class B systems and three inch diameter for class A systems. Such valves shall be connected to the low pressure side of the system and arranged or located so that they may be operated outside of the entrance to the machinery room.

These valves shall be vented to the atmosphere as further provided.

Valves shall be identified with a permanent tag containing instructions for operation.

85-66. Absorption refrigerating systems shall be provided with check valves located between the rectifier and condenser and in the discharge line of the aqua pump as close to the pump as is practical.

85-67. A quick closing suction valve shall be installed in the suction pipes of each pressure imposing element of refrigerating systems in accordance with the schedule in section 85-59. These valves shall be arranged for manual closing from a point near the entrance to the room in which the element is located, or to close automatically in case of sudden failure of pressure in the suction pipe at the element.

85-68. Compressors of class A and B refrigerating systems, except those operating below atmospheric pressure or those containing a class 1 non-irritant and non-flammable refrigerant, shall be equipped with pump out connections. These connections shall be designed to reverse the normal flow of refrigerant so that the refrigerant contained in the high pressure side may be pumped into the low pressure side of the system.

85-69. Class A, B, C, and D refrigerating systems shall be equipped with pressure gauges on the high and low pressure side. Every liquid level gauge glass shall be of sufficient strength to withstand the high side test pressure and, except those of the bull's eye type, shall have automatic closing shut-off valves and shall be adequately protected against injury.

85-70. Refrigerant shall be discharged as follows:

(a) Where the discharge of a refrigerant from a pressure relief valve to the outside atmosphere is required, the discharge pipe outlet shall be not less than twelve feet above the ground and not closer than ten feet to any opening in building, or closer than twenty feet to any fire escape, and shall be turned downward. The discharge pipe shall be not less than the size of the relief device outlet.

(b) Where ammonia is used in a class B or C system, refrigerant may be discharged into a tank of water which shall be used for no purpose except ammonia absorption. At least one gallon of fresh water shall be provided for every one pound of ammonia in the system. The water used shall be prevented from freezing without the use of salt or chemicals. The tank shall be substantially constructed of not less than one-eighth inch steel. No horizontal dimension shall be greater than one-half the height. The tank shall have a hinged cover or, if closed, shall have a vent of ample capacity at the top of the tank only. The discharge pipe for the pressure relief valve shall be equipped with a diffuser and shall discharge the ammonia near the bottom of the tank.

(c) An emergency relief valve on a system using ammonia shall discharge into such tank of water or into an ammonia mixer consisting of a closed cylinder designed for fifty pounds per square inch working pressure with ammonia and water inlet connections and a valveless connection to the sewer, so arranged that the ammonia will be completely absorbed before leaving the mixer. The connection shall be so arranged that it is impossible to operate the hand operated ammonia relief valve without first opening the valve supplying the water to the ammonia mixer.

(d) Relief devices located on the pressure vessels may be vented to the low pressure side of a system; provided, however, that the low pressure side is equipped with a relief device vented to the atmosphere.

(e) Discharge from more than one relief valve may be run into a common header, the area of which shall be equal to the area required for the total refrigerating capacity of all the vessels.

Permits, Tests, and Inspections

85-71. Before any owner or agent shall proceed with the installation or alteration of any mechanical refrigerating system, he shall secure the approval of the department of steam boilers, unfired pressure vessels, and cooling plants, and obtain a permit for the work. No refrigerating system shall be installed, erected, or maintained, nor shall any reconstruction of old apparatus or old system for mechanical refrigerating or cooling purposes be undertaken, unless plans and specifications for the same shall be filed in the office of the department of steam boilers, unfired pressure vessels, and cooling plants, and approved by the chief inspector of said department. Such plans and specifications shall show the kind and amount of refrigerant used. Upon approval of the said plans, a duplicate set of which shall be left on file in the office of the chief inspector, and the payment of the required fees, the said chief inspector shall issue a permit for the installation of said apparatus. No permit shall be required for emergency repairs. Where water is to be used for cooling the refrigerant or for other cooling purposes, no permit for the installation of a refrigerating plant shall be granted unless the plans and specifications have been submitted to the department of public works and the board of health and said departments have issued a permit for the use of water from the city water mains.

85-72. It shall be the duty of any person installing refrigerating systems to apply tests to said systems as required by the chief inspector of the department of steam boilers, unfired pressure vessels, and cooling plants.

Tests shall be made in the presence of an inspector of the department of steam boilers, unfired pressure vessels, and cooling plants and shall be applied to every refrigerating system, or parts thereof, installed before being put into use; provided, however, that the department of steam boilers, unfired pressure vessels, and cooling plants may accept from the manufacturer of a single unit system a certified copy of test report showing that test of said system, as required by the building provisions of this code were made at the place of manufacture.

It shall be the duty of every person installing refrigerating systems, as aforesaid, to notify the chief inspector of the department of steam boilers, unfired pressure vessels, and cooling plants whenever any system has reached the stage of construction where it is ready for inspection tests.

The testing of every refrigerating system shall include a pressure or vacuum test of the complete piping system preferably with the evaporator installed but valves thereon may be closed to prevent withdrawal of the refrigerant.

Under these tests a partial vacuum of twenty inches of mercury shall be produced within the system and shall be held for a period of at least one hour with no detectable drop.

Every part of every refrigerating system shall be designed, constructed, and assembled to withstand safely, and without injury, the required minimum test pressures, which shall be applied for the pressure test. These test pressures shall be held by every refrigerating system under test for a period of one hour or over without any appreciable fall.

85-73. Pressure tests of refrigerating systems shall be made with air, carbon dioxide, nitrogen, or other inert gas approved by said department. When practical, water may be used. When testing with air, care shall be taken to prevent the temperature at any point from rising above one hundred thirty degrees Fahrenheit.

85-74. It shall be the duty of the chief inspector of the department of steam boilers, unfired pressure vessels, and cooling plants, and his assistants to inspect all parts of all mechanical refrigerating systems employing any refrigerant which is expanded, vaporized, liquefied, or compressed in its refrigerating cycle, including piping machinery, boilers, tanks, jacketed kettles, generators, shell brine coolers, shell condensers, shell absorbers, purifiers, pipe condensers, compressors and pipes used therein, and the apparatus connected therewith and the extensions thereunto. The said chief inspector shall make such inspection once in each year. The said chief inspector is further authorized and required to inspect any refrigerating system or apparatus whenever, in his judgment, inspection is necessary for the protection of life and property. Whenever such inspection discloses that on account of age, obsolescence, wear and tear or for any other cause such refrigerating system has become or is likely to become dangerous to life and health, the said chief inspector shall give notice in writing to the person owning, leasing, or controlling such refrigerating system directing him to make such changes, alterations, or repairs as in the judgment of the chief inspector are necessary to make the said refrigerating system safe for the occupants of the premises; such notice shall state briefly the nature of the work required to be done and shall specify the time in which the said work shall be completed, which shall be fixed by the chief inspector upon consideration of the condition of such refrigerating system, or parts thereof and the danger to life or property which may result from its unsafe condition. Upon failure of such person to comply with the request set forth in such notice within the time fixed in such notice, the chief inspector is hereby authorized to order the system shut down and the refrigerant gas pumped from such system and to prohibit its further use until the aforesaid directions are complied with. Any expense or outlay incurred by the chief inspector in shutting down such refrigerating system shall be a charge upon and be collected from the owner, lessee, or person controlling such system by legal proceedings prosecuted by the department of law.

85-75. When an inspection of a mechanical refrigerating system has been made, and the same has been approved by the chief inspector or supervising mechanical engineer and chief deputy inspector of steam boilers and cooling plants, the said inspector shall make and deliver to the person for whom the inspection was made, upon the payment of the required fees, a certificate of inspection together with a general description of such apparatus stating for what purpose the appliances are to be used and the pressure in pounds at which they may be safely used. This certificate shall be framed and hung in a conspicuous place in the machinery room.

It shall be unlawful for any person to use or operate any refrigerating system required to be inspected under the building provisions of this code until a certificate of inspection has been issued by the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants. It shall be unlawful for any person to use or operate any refrigerating system that has been repaired, reconditioned, or reconstructed until a certificate shall have been procured from the department for the inspection of steam boilers, unfired pressure vessels, and cooling plants to the effect that the said system is in such a condition that it can be safely used.

85-76. No inspection shall be required on a single unit system containing six pounds or less of refrigerant with power supplied by a motor not exceeding one-third H.P. or on a remote system using not more than a one-third H.P. motor and containing six pounds or less of refrigerant. Such remote system shall supply not more than one evaporator in a separately refrigerated space; provided, however, that nothing herein contained shall prevent the department from inspecting any such single unit or remote system whenever in its judgment inspection is necessary for the protection of life and property.

85-77. It shall be the duty of the chief inspector of steam boilers, unfired pressure vessels, and cooling plants, upon an application in writing, made by any person owning, leasing, or controlling the use of any mechanical refrigerating system, stating that the same is out of repair or has been repaired, to examine the same when so repaired, and determine if such repairing has been properly done; and it shall be unlawful for any person to use any mechanical refrigerating system after the same has been repaired until a certificate shall have been procured from the inspector to the effect that such repairing has been properly done and that such boiler, unfired pressure vessel, or mechanical refrigerating system may be safely used.

85-78. Any person manufacturing or dealing in the sale or erection of refrigerating systems or apparatus as defined by this chapter, shall, on the sale or delivery of any such system or apparatus at any point or locality within the city, notify the department of steam boilers, unfired pressure vessels, and cooling plants, giving the name of the purchaser, his street address, and the street address to which such system is to be delivered. Any person selling a second hand or used refrigerating system shall before painting the same, have it inspected by the department of steam boilers, unfired pressure vessels, and cooling plants, and before offering for sale any such system, shall have in his possession a certificate issued by the said department to the effect that the said system is in such condition that it can be safely used. The fee for such inspection shall be the same as provided for regular periodic inspections.

Violation of Chapter Provisions

85-79. Any person violating, or resisting or opposing the enforcement of, any of the provisions of this chapter, where no other penalty is provided, shall be fined not less than twenty-five dollars nor more than two hundred dollars for each offense. Every day such violation shall continue shall constitute a separate and distinct offense; and any builder or contractor who shall construct any building in violation of the provisions of this chapter, and any architect who shall design, draw plans for, or have supervision of such building, or who shall permit it to be constructed, shall be liable for the penalties provided and imposed by this section.

CHAPTER 89

FIRE LIMITS

89-1. Building restrictions
89-2. Fire limits defined
89-3. Provisional fire limits defined
89-4. Fire limit maps

89-1. No building, structure, shed or enclosure of wood frame construction shall be erected inside the fire limits or provisional fire limits, except as provided in section 67-59 in the building provisions of this code.

Within the provisional fire limits of the city it shall be lawful to erect a building of wood frame construction to be used for residence or mercantile purposes upon approval by the commissioner of buildings of a petition presented together with a plat, plans, and specifications showing the space where such building is to be erected. Such petition shall be verified by the affidavit of the applicant and shall contain the written consent of the owners of a majority of the frontage upon both sides of the streets surrounding the square in which the proposed building is to be erected. No such petition shall be required, however, for the erection within the provisional fire limits of frame buildings of the type permitted by section 47-4 in the building provisions of this code.

No residence or mercantile building of wood frame construction shall be erected within the provisional fire limits exceeding forty feet in height.

89-2. The territory embraced within the fire limits of the city shall be all the territory within the corporate limits of the city with the following exceptions:

(a) All that territory bounded on the west by the east line of the Chicago and Northwestern railway, on the south by the center line of W. Devon avenue, on the east by Lake Michigan, on the north by the city limits.

(b) All that territory bounded on the west by the center line of N. Cicero avenue, on the south by the center line of the north branch of the Chicago river, on the east by the center line of N. Pulaski road, and on the north by the center line of W. Devon avenue.

(d) All that territory bounded on the west by a line one hundred and twenty-five feet east of the east line of N. Western avenue, on the southwest by a line one hundred and twenty-five feet northeasterly of the northeasterly line of N. Lincoln avenue, on the south by a line one hundred and twenty-five feet north of the north line of W. Lawrence avenue, on the east by the center line of N. Leavitt street, and on the north by a line one hundred and twenty-five feet south of the south line of W. Foster avenue.

(e) All that territory described as follows: beginning at the intersection of the center line of the north branch of the Chicago river, and the center line of W. Berteau avenue; thence southerly and easterly along the center line of the north branch of the Chicago river, to the center line of W. Fullerton avenue; thence east along the center line of W. Fullerton avenue, to the center line of N. Southport avenue; thence north along the center line of N. Southport avenue to the center line of W. Belmont avenue; thence west along the center line of W. Belmont avenue to the center line of N. Western avenue; thence north along the center line of N. Western avenue to the center line of W. Addison street; thence west along the center line of W. Addison street to a line one hundred and twenty-five feet west of the west line of N. Western avenue; thence north along said line one hundred and twenty-five feet west of the west line of N. Western avenue, to the center line of W. Berteau avenue, thence west along the center line of W. Berteau avenue to the point of beginning.

(f) All that territory described as follows: beginning at the intersection of the center lines of N. Kedzie avenue and W. Addison street; thence west along the center line of W. Addison street to a line one hundred and twenty-five feet east of the east line of N. Cicero avenue; thence south along said line one hundred and twenty-five feet east of the east line of N. Cicero avenue to a line one hundred and twenty-five feet north of the north line of W. Diversey avenue; thence east along said line one hundred and twenty-five feet north of the north line of W. Diversey avenue to a line one hundred and twenty-five feet west of the west line of N. Kostner avenue; thence north along said line one hundred and twenty-five feet west of the west line of N. Kostner avenue to a line one hundred and twenty-five feet north of the north line of W. Belmont avenue; thence east along said line one hundred and twenty-five feet north of the north line of W. Belmont avenue to the center line of N. Kedzie avenue; thence north along the center line of N. Kedzie avenue to the point of beginning.

(g) All that territory described as follows: beginning at the intersection of the center line of N. Kedzie avenue and W. Diversey avenue; thence north along the center line of N. Kedzie avenue, to a line one hundred and twenty-five feet south of the south line of W. Belmont avenue; thence west along said line one hundred and twenty-five feet south of the south line of W. Belmont avenue to the center line of N. Pulaski road; thence south along the center line of N. Pulaski road to the center line of W. Fullerton avenue; thence east along the center line of W. Fullerton avenue to the center line of N. Central Park avenue; thence north along the center line of N. Central Park avenue to the center line of W. Diversey avenue; thence east along the center line of W. Diversey avenue to the point of beginning.

(h) All that territory described as follows: beginning at the intersection of the center line of W. Fullerton avenue and a line one hundred and twenty-five feet west of the west line of N. Cicero avenue; thence north along said line one hundred and twenty-five feet west of the west line of N. Cicero avenue to a line one hundred and twenty-five feet south of the south line of W. Diversey avenue; thence west along said line one hundred and twenty-five feet south of the south line of W. Diversey avenue to the center line of N. Harlem avenue; thence south along the center line of N. Harlem avenue to the center line of W. Wrightwood avenue; thence east along the center line of W. Wrightwood avenue to the center line of N. Narragansett avenue; thence south along the center line of N. Narragansett avenue, to the center line of W. Fullerton avenue, thence east along the center line of W. Fullerton avenue to the point of beginning.

(i) All that territory comprising that part of the township of Leyden lying within the city limits of Chicago, and that part of the township of Norwood Park within the city limits of Chicago, west of N. Pioneer avenue, and south of W. Berteau avenue.

(j) All that territory described as follows: beginning at the intersection of S. Western avenue boulevard and the center line of the Illinois and Michigan canal; thence southwesterly along the center line of the Illinois and Michigan canal to the center line of W. Pershing road extended west; thence west along the center line of W. Pershing road extended west to the center line of S. La Crosse avenue extended north; thence south along the center line of S. La Crosse avenue extended north to the southeasterly line of the Chicago and Alton railroad right-of-way; thence southwesterly along said southeasterly line of the Chicago and Alton railroad right-of-way to the center line of S. Laramie avenue; thence south along the center line of S. Laramie avenue to the center line of W. Fifty-first street; thence east along the center line of W. Fifty-first street to the center line of S. Cicero avenue; thence north along the center line of S. Cicero avenue, to the center line of W. Forty-fifth street; thence east along the center line of W. Forty-fifth street and W. Forty-fifth street extended, to the center line of S. Western avenue boulevard; thence south along the center line of S. Western avenue boulevard, to the center line of W. Forty-ninth street; thence east along the center line of W. Forty-ninth street to the center line of S. Loomis street; thence south along the center line of S. Loomis street to the center line of W. Garfield boulevard; thence east along the center line of W. Garfield boulevard, to the center line of S. Racine avenue; thence north along the center line of S. Racine avenue, to the center line of W. Fifty-first street; thence east along the center line of W. Fifty-first street to a line one hundred and twenty-five feet west of the west line of S. Halsted street; thence north along said line one hundred and twenty-five feet west of the west line of S. Halsted street, to the center line of W. Forty-seventh street; thence west along the center line of W. Forty-seventh street, to the center line of S. Ashland avenue; thence north along the center line of S. Ashland avenue to the center line of W. Forty-third street; thence east along the center line of W. Forty-third street, to a line one hundred and twenty-five feet east of the east line of S. Ashland avenue; thence north along said line one hundred and twenty-five feet east of the east line of S. Ashland avenue to the center line of W. Fortieth street; thence west along the center line of W. Fortieth street to the center line of S. Ashland avenue; thence south along the center line of S. Ashland avenue to the center line of W. Forty-first street; thence west along the center line of W. Forty-first street to a line one hundred and twenty-five feet west of the west line of S. Ashland avenue; thence south along said line one hundred and twenty-five feet west of the west line of S. Ashland avenue to the center line of W. Forty-third street; thence west along the center line of W. Forty-third street to the center line of S. Damen avenue extended north; thence north along the center line of S. Damen avenue extended north to the center line of W. Pershing road; thence west along the center line of W. Pershing road to the center line of S. Western avenue boulevard; thence north along the center line of S. Western avenue boulevard to the point of beginning.

(k) All that territory bounded on the north by W. Fifty-second street, on the south by W. Fifty-third street, on the west by S. Morgan street, and on the east by S. Peoria street.

(l) All that territory described as follows: beginning at the intersection of the center line of S. Normal avenue and the center line of W. Fortieth street (Chicago Junction railway); thence west along the center line of W. Fortieth street (Chicago Junction railway) to the center line of S. Wallace street; thence south along the center line of S. Wallace street to the center line of W. Forty-third street; thence west along the center line of W. Forty-third street to a line one hundred and twenty-five feet east of the east line of S. Halsted street; thence south along said line one hundred and twenty-five feet east of the east line of S. Halsted street, to the center line of W. Fifty-first street; thence east along the center line of W. Fifty-first street to the center line of S. Union avenue; thence south along the center line of S. Union avenue to the center line of W. Garfield boulevard; thence east along the center line of W. Garfield boulevard to a line one hundred and twenty-five feet west of the west line of S. Wentworth avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Wentworth avenue, to the center line of W. Forty-third street; thence west along the center line of W. Forty-third street to the center line of S. Normal avenue; thence north along the center line of S. Normal avenue to the point of beginning.

(m) All that territory bounded on the north by the center line of W. Forty-third street, on the south by the center line of W. Garfield boulevard, on the west by a line one hundred and twenty-five feet east of the east line of S. Wentworth avenue, and on the east by a line one hundred and twenty-five feet west of the west line of S. State street.

(n) All that territory described as follows: beginning at the intersection of a line one hundred and twenty-five feet south of the south line of W. Sixty-third street and the center line of S. Racine avenue; thence west along said line one hundred and twenty-five feet south of the south line of W. Sixty-third street, to the center line of Loomis street boulevard; thence south along the center line of Loomis street boulevard, to the center line of W. Sixty-sixth street; thence west along the center line of W. Sixty-sixth street, to the center line of S. Wood street; thence south along the center line of S. Wood street to the center line of W. Sixty-ninth street; thence west along the center line of W. Sixty-ninth street to the center line of S. Bell avenue; thence south along the center line of S. Bell avenue to the center line of W. Seventy-fifth street (Belt railway); thence east along the center line of W. Seventy-fifth street (Belt railway), to a line one hundred and twenty-five feet west of the west line of S. Ashland avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Ashland avenue, to the center line of W. Seventy-first street; thence east along the center line of W. Seventy-first street, to a line one hundred and twenty-five feet east of the east line of S. Ashland avenue; thence south along said line one hundred and twenty-five feet east of the east line of S. Ashland avenue, to the center line of W. Seventy-fifth street (Belt railway); thence east along the center line of W. Seventy-fifth street (Belt railway) to the center line of S. Racine avenue, thence north along the center line of S. Racine avenue, to the point of beginning.

(o) All that territory bounded on the northeast by the northeasterly line of the right-of-way of the New York Central railroad (Lake Shore and Michigan Southern railway), on the west by the center line of S. State street, on the south by the center line of W. Marquette road.

(p) All that territory comprising that part of the township of Worth (former Village of Mt. Greenwood and former Village of Beverly) within the city limits.

(q) All that territory described as follows: beginning at the intersection of the center line of W. Ninetieth street and S. State street; thence west along the center line of W. Ninetieth street, to the center line of S. Wentworth avenue; thence south along the center line of S. Wentworth avenue to a line one hundred and twenty-five feet north of the north line of W. Ninety-fifth street; thence west along said line one hundred and twenty-five feet north of the north line of W. Ninety-fifth street, to a line one hundred and twenty-five feet east of the east line of S. Stewart avenue (Chicago and Western Indiana railroad); thence north along said line one hundred and twenty-five feet east of the east line of S. Stewart avenue (Chicago and Western Indiana railroad), to a line one hundred and twenty-five feet south of the south line of W. Eighty-third street; thence west along said line one hundred and twenty-five feet south of the south line of W. Eighty-third street, to the center line of S. Eggleston avenue extended north; thence south along the center line of S. Eggleston avenue extended north, and S. Eggleston avenue, to the center line of W. Ninety-ninth street; thence east along the center line of W. Ninety-ninth street to the center line of S. Princeton avenue; thence south along the center line of S. Princeton avenue to a line one hundred and twenty-five feet north of the north line of W. One hundred and second street; thence west along said line one hundred and twenty-five feet north of the north line of W. One hundred and second street, to the east line of the Chicago and Western Indiana railroad; thence south along the east line of the Chicago and Western Indiana railroad, to a line one hundred and twenty-five feet south of the south line of W. One hundred and second street; thence east along said line one hundred and twenty-five feet south of the south line of W. One hundred and second street, to the center line of S. Princeton avenue; thence south along the center line of S. Princeton avenue, to a line one hundred and twenty-five feet north of the north line of W. One hundred and third street; thence east along said line one hundred and twenty-five feet north of the north line of W. One hundred and third street, to a line one hundred and twenty-five feet west of the west line of S. Michigan avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Michigan avenue, to a line one hundred and twenty-five feet south of the south line of E. and W. Ninety-ninth street; thence west along said line one hundred and twenty-five feet south of the south line of E. and W. Ninety-ninth street to a line one hundred and twenty-five feet west of the west line of S. State street; thence north along said line one hundred and twenty-five feet west of the west line of S. State street, to the center line of W. Ninety-fifth street; thence east along the center line of W. Ninety-fifth street to the center line of S. State street; thence north along the center line of S. State street to the point of beginning. Excluding, however, from the exception embraced in this paragraph the territory bounded on the north by the center line of W. Ninety-sixth street, on the south by the center line of W. Ninety-seventh street, on the west by a line one hundred and twenty-five feet west of the west line of S. Yale avenue, and on the east by a line one hundred and twenty-five feet east of the east line of S.Yale avenue.

(r) All that territory bounded on the north by the center line of W. One hundred and seventeenth street, on the south by the center line of W. One hundred and eighteenth street, on the west by a line one hundred and twenty-five feet west of the west line of S. Peoria street, and on the east by a line one hundred and twenty-five feet east of the east line of S. Peoria street.

(s) All that territory bounded on the north by a line one hundred and twenty-five feet south of the south line of E. One hundred and third street, on the south by a line one hundred and twenty-five feet north of the north line of E. One hundred and seventh street, on the west by a line one hundred and twenty-five feet east of the east line of S. Michigan avenue, and on the east by the center line of S. Indiana avenue.

(t) All that territory bounded on the north by a line one hundred and twenty-five feet south of the south line of W. One hundred and third street, on the south by the center line of W. One hundred and eleventh street, on the west by the center line of S. Stewart avenue (Chicago and Western Indiana railroad). and on the east by a line one hundred and twenty-five feet west of the west line of S. Wentworth avenue; also that territory bounded on the north by the center line of W. One hundred and eleventh street, on the south by a line one hundred and twenty-five feet north of the north line of W. One hundred and nineteenth street, on the west by the center line of S. Halsted street, and on the east by a line one hundred and twenty-five feet west of the west line of S. Wentworth avenue.

(u) All that territory described as follows: beginning at the intersection of a line one hundred and twenty-five feet south of the south line of E. One hundred and third street and a line one hundred and twenty-five feet west of the west line of S. Michigan avenue; thence west along said line one hundred and twenty-five feet south of the south line of E. One hundred and third street and W. One hundred and third street, to a line one hundred and twenty-five feet east of the east line of S. Wentworth avenue; thence south along said line one hundred and twenty-five feet east of the east line of S. Wentworth avenue, to a line one hundred and twenty-five feet north of the north line of W. One hundred and nineteenth street; thence east along said line one hundred and twenty-five feet north of the north line of W. One hundred and nineteenth street and E. One hundred and nineteenth street, to a line one hundred and twenty-five feet west of the west line of S. Michigan avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Michigan avenue, to a line one hundred and twenty-five feet south of the south line of E. One hundred and seventh street; thence west along said line one hundred and twenty-five feet south of the south line of E. One hundred and seventh street, to the center line of S. State street; thence north along the center line of S. State street to a line one hundred and twenty-five feet north of the north line of E. One hundred and seventh street; thence east along said line one hundred and twenty-five feet north of the north line of E. One hundred and seventh street, to a line one hundred and twenty-five feet west of the west line of S. Michigan avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Michigan avenue, to the point of beginning.

(v) All that territory described as follows: beginning at the intersection of the center line of W. One hundred and nineteenth street and the center line of S. Ashland avenue; thence south along the center line of S. Ashland avenue, to the center line of W. One hundred and twenty-third street; thence east along the center line of W. One hundred and twenty-third street, to the center line of S. Halsted street; thence south along the center line of S. Halsted street, to the center line of W. One hundred and twenty-seventh street; thence west along the center line of W. One hundred and twenty-seventh street, to the center line of S. Peoria street; thence south along the center line of S. Peoria street, to the southerly city limits, thence easterly and southerly and east along the southerly city limits of Chicago, to the Illinois-Indiana state line, thence north along the Illinois-Indiana state line, to the center line of E. One hundred and ninth street; thence west along the center line of E. One hundred and ninth street to the center line of S. Avenue D; thence south along the center line of S. Avenue D, to a line four hundred and ten feet north of the north line of E. One hundred and tenth street; thence west along said line four hundred and ten feet north of the north line of E. One hundred and tenth street to the easterly right of way line of the South Chicago and Southern Railroad, thence southerly along the easterly right of way line of the South Chicago and Southern Railroad to the center line of E. One hundred and twelfth street; thence west along the center line of E. One hundred and twelfth street to the center line of S. Avenue F; thence north along the center line of S. Avenue F, to the center line of E. One hundred and tenth street; thence east along the center line of E. One hundred and tenth street to a line one hundred and twenty-five feet east of the east line of S. Avenue F; thence north along said line one hundred and twenty-five feet east of the east line of S. Avenue F. to the center line of E. One hundred and eighth street; thence west along the center line of E. One hundred and eighth street to a line one hundred and twenty-five feet west of the west line of S. Avenue F; thence south along said line one hundred and twenty-five feet west of the west line of S. Avenue F, to the center line of E. One hundred and ninth street; thence west along the center line of E. One hundred and ninth street to the center line of S. Avenue H; thence south along the center line of S. Avenue H, to the center line of E. One hundred and tenth street; thence west along the center line of E. One hundred and tenth street to a line one hundred and twenty-five feet east of the east line of S. Ewing Avenue; thence south along said line one hundred and twenty-five feet east of the east line of S. Ewing avenue to a line one hundred and twenty-five feet north of the north line of E. One hundred and twelfth street; thence east along said line one hundred and twenty-five feet north of the north line of E. One hundred and twelfth street to the center line of S. Avenue J; thence south along the center line of S. Avenue J, to a line one hundred and twenty-five feet south of the south line of E. One hundred and twelfth street; thence west along said line one hundred and twenty-five feet south of the south line of E. One hundred and twelfth street to a line one hundred and twenty-five feet east of the east line of S. Ewing avenue; thence south along said line one hundred and twenty-five feet east of the east line of S. Ewing avenue to the center line of E. One hundred and fourteenth street; thence west along the center line of E. One hundred and fourteenth street to a line one hundred and twenty-five feet west of the west line of S. Ewing avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Ewing avenue to a line one hundred and twenty-five feet south of the south line of E. One hundred and twelfth street; thence west along said line one hundred and twenty-five feet south of the south line of E. One hundred and twelfth street to the center line of S. Avenue L; thence north along the center line of S. Avenue L. to a line one hundred and twenty-five feet north of the north line of E. One hundred and twelfth street; thence east along said line one hundred and twenty-five feet north of the north line of E. One hundred and twelfth street to a line one hundred and twenty-five feet west of the west line of S. Ewing avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Ewing avenue to the center line of E. One hundred and ninth street; thence west along the center line of E. One hundred and ninth street to a line one hundred and twenty-five feet west of the west line of S. Buffalo avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Buffalo avenue to the center line of E. One hundred and eighth street; thence east along the center line of E. One hundred and eighth street, to the center line of S. Avenue M; thence north along the center line of S. Avenue M, to the center line of E. One hundred and sixth street; thence east along the center line of E. One hundred and sixth street, to the Illinois-Indiana state line, thence north along the Illinois-Indiana state line, to the shore of Lake Michigan, thence north along the shore of Lake Michigan, to the center line of E. Ninety-fifth street, extended east; thence west along the center line of E. Ninety-fifth street extended east, and E. Ninety-fifth street, to a line two hundred feet east of the east bank of the Calumet river; thence southerly along said line two hundred feet east of the east bank of the Calumet river, to the center line of E. One hundred and sixth street; thence west along the center line of E. One hundred and sixth street, to the southeasterly line of the right-of-way of the Pittsburgh, Fort Wayne and Chicago railway; thence northeasterly along the southeasterly line of the right-of-way of the Pittsburgh, Fort Wayne and Chicago railway, to the northeasterly line of the New York Central railroad; (Lake Shore and Michigan Southern railway) thence northwesterly along the northeasterly line of the New York Central railroad (Lake Shore and Michigan Southern railway) to a line one hundred and twenty-five feet west of the west line of S. Manistee avenue extended south; thence north along said line one hundred and twenty-five feet west of the west line of S. Manistee avenue extended south, to the center line of E. Eighty-ninth street; thence east along the center line of E. Eighty-ninth street, to the center line of S. Burley avenue; thence north along the center line of S. Burley avenue, to the center line of E. Eighty-third street; thence west along the center line of E. Eighty-third street to the center line of S. Brandon avenue, thence north along the center line of S. Brandon avenue, to a line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street; thence east along said line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street, to the shore of Lake Michigan; thence northwesterly along the shore of Lake Michigan to the center line of E. Sixty-seventh street; thence west along the center line of E. Sixty-seventh street, to the center line of S. Cottage Grove avenue, thence north along the center line of S. Cottage Grove avenue, to the center line of E. Sixty-third street; thence west along the center line of E. Sixty-third street, to the center line of S. South Park avenue; thence south along the center line of S. South Park avenue, to the center line of E. Seventy-fifth street; thence east along the center line of E. Seventy-fifth street, to the center line of S. Cottage Grove avenue; thence south along the center line of S. Cottage Grove avenue, to a line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street; thence east along said line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street, to the east line of the right-of-way of the Illinois Central railroad, thence northeasterly along the east line of the right-of-way of the Illinois Central railroad, to the center line of E. Seventy-ninth street; thence east along the center line of E. Seventy-ninth street, to the center line of S. Stony Island avenue; thence south along the center line of S. Stony Island avenue, to a line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street; thence east along said line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street, to the center line of S. Yates avenue; thence south along the center line of S. Yates avenue, to a line one hundred and twenty-five feet south of the south line of E. Eighty-third street, thence west along said line one hundred and twenty-five feet south of the south line of E. Eighty-third street, to a line one hundred and twenty-five feet west of the west line of S. Yates avenue; thence south along said line one hundred and twenty-five feet west of the west line of S. Yates avenue, to the southwesterly line of the New York Central railroad (Lake Shore and Michigan Southern railroad); thence southeasterly along the southwesterly line of the New York Central railroad (Lake Shore and Michigan Southern railroad) to the center line of S. Colfax avenue; thence south along the center line of S. Colfax avenue, to the center line of E. Ninety-first street; thence west along the center line of E. Ninety-first street, to the center line of S. Stony Island avenue; thence north along the center line of S. Stony Island avenue, to the center line of E. Eighty-seventh street; thence west, along the center line of E. Eighty-seventh street, to the northeasterly line of the New York, Chicago and St. Louis railroad; thence northwesterly along the northeasterly line of the New York, Chicago and St. Louis railroad, to the center line of E. Eighty-third street; thence west along the center line of E. Eighty-third street, to a line one hundred and twenty-five feet southeasterly of the southeasterly line of the right-of-way of the Illinois Central railroad; thence southwesterly along said line one hundred and twenty-five feet southeasterly of the southeasterly line of the right-of-way of the Illinois Central railroad, to the center line of E. Eighty-seventh street; thence west along the center line of E. Eighty-seventh street, to a line one hundred and twenty-five feet west of the west line of S. South Park avenue; thence south along said line one hundred and twenty-five feet west of the west line of S. South Park avenue, to the center line of E. Ninety-fifth street; thence east along the center line of E. Ninety-fifth street, to a line one hundred and twenty-five feet southeasterly of the southeasterly line of the right-of-way of the Illinois Central railroad; thence northeasterly along said line one hundred and twenty-five feet southeasterly of the southeasterly line of the right-of-way of the Illinois Central railroad, to a line one hundred and twenty-five feet north of the north line of E. Ninety-fifth street, thence east along said line one hundred and twenty-five feet north of the north line of E. Ninety-fifth street, to a line one hundred and twenty-five feet east of the east line of S. Stony Island avenue; thence south along said line one hundred and twenty-five feet east of the east line of S. Stony Island avenue, to the shore of Lake Calumet, thence southwesterly, southerly and southeasterly along the shore of Lake Calumet to the center line of E. One hundred and twenty-seventh street, thence west along the center line of E. One hundred and twenty-seventh street, to the northeasterly line of the right-of-way of the Michigan Central railroad, thence northwesterly along the northeasterly line of the right-of-way of the Michigan Central railroad, to the center line of E. Kensington avenue; thence west along the center line of E. Kensington avenue. to the center line of S. Indiana avenue; thence north along the center line of S. Indiana avenue, to a line one hundred and twenty-five feet south of the south line of E. One hundred and seventh street; thence west along said line one hundred and twenty-five feet south of the south line of E. One hundred and seventh street, to a line one hundred and twenty-five feet east of the east line of S. Michigan avenue; thence south along said line one hundred and twenty-five feet east of the east line of S. Michigan avenue, to the center line of W. One hundred and twenty-seventh street; thence west along the center line of W. One hundred and twenty-seventh street to a line one hundred and twenty-five feet west of the west line of S. Michigan avenue; thence north along said line one hundred and twenty-five feet west of the west line of S. Michigan avenue to a line one hundred and twenty-five feet south of the south line of E. and W. One hundred and nineteenth street; thence west along said line one hundred and twenty-five feet south of the south line of E. and W. One hundred and nineteenth street, to a line one hundred and twenty-five feet west of the west line of S. Morgan street; thnce north along said line one hundred and twenty-five feet west of the west line of S. Morgan street to the center line of W. One hundred and nineteenth street; thence west along the center line of W. One hundred and nineteenth street, to a point of beginning.

(w) All that territory bounded on the north by the center line of E. One hundred and fourteenth street; on the south by the center line of E. One hundred and eighteenth street; on the west by a line one hundred and twenty-five feet west of the west line of S. Buffalo avenue; on the east by a line one hundred and twenty-five feet east of the east line of S. Avenue O.

(x) All that territory hereinafter described as within the provisional fire limits. [Amend. Coun. J. 12-21-39, p. 1488; 5-15-40, p. 2536; 5-22-40, p. 2574; 12-3-40, p. 3620; 2-5-41, p. 4221; 2-26-41, p. 4330; 4-23-41, p. 4648.]

89-3. The territory embraced within the provisional fire limits of city shall be as follows:

(a) All that territory bounded on the north by the center line of N. Rogers avenue, on the south by the center line of W. Devon avenue and Sheridan road, on the west by the east line of the right-of-way of the Chicago and Northwestern railway, and on the east by Lake Michigan.

(c) All that territory bounded on the northeast by the northeasterly line of the right-of-way of the New York Central railroad (Lake Shore and Michigan Southern railway), on the west by the center line of S. State street, on the south by the center line of E. Marquette road.

(d) All that territory bounded on the north by the center of E. Eighty-seventh street, on the south by the center line of E. Ninety-fifth street, and on the west by a line one hundred and twenty-five feet west of the west line of S. South Park avenue, and on the east by a line one hundred and twenty-five feet southeast of the southeasterly line of the right-of-way of the Illinois Central railroad.

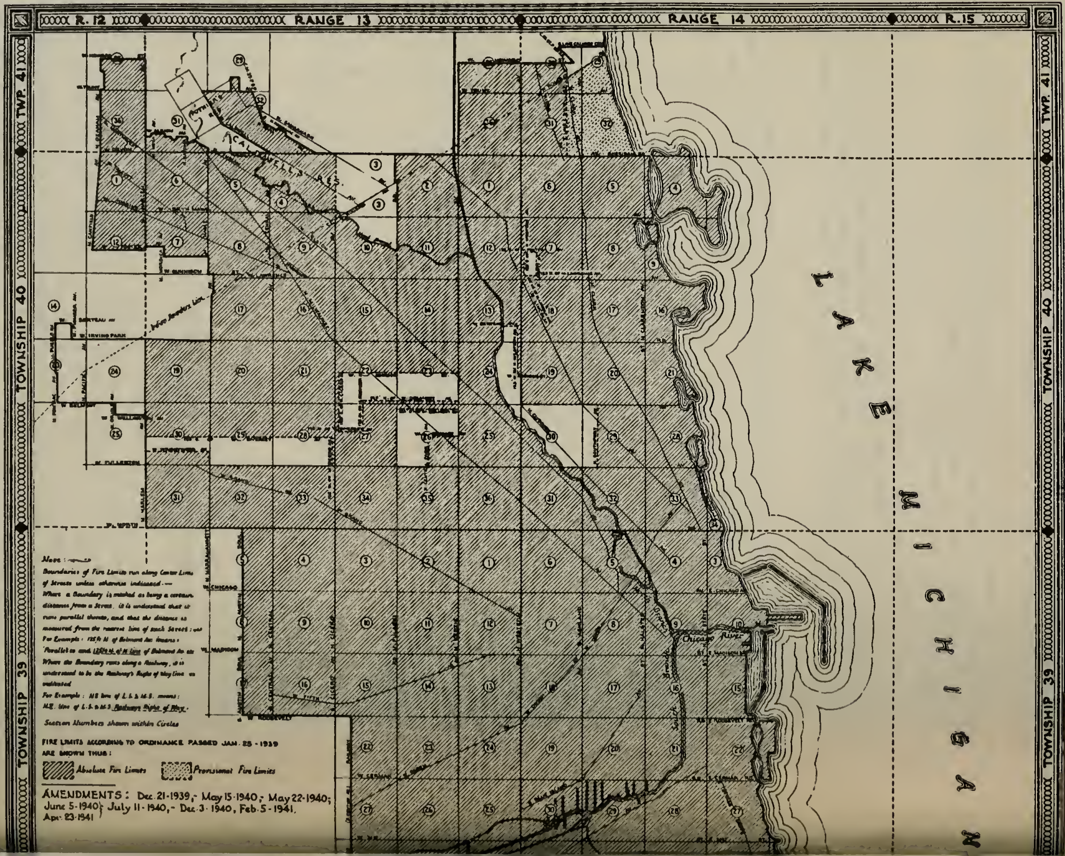
(e) All that territory described as follows: beginning at the shore of Lake Michigan and the center line of E. Sixty seventh street; thence west along the center line of E. Sixty-seventh street, to the center line of S. Cottage Grove avenue; thence north along the center line of S. Cottage Grove avenue, to the center line of E. Sixty-third street; thence west along the center line of E. Sixty-third street, to the center line of S. South Park avenue; thence south along the center line of S. South Park avenue, to the center line of E. Seventy-fifth street; thence east along the center line of E. Seventy-fifth street, to the center line of S. Cottage Grove avenue; thence south along the center line of S. Cottage Grove avenue, to a line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street; thence east along said line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street, to the east line of the right-of-way of the Illinois Central railroad; thence northeasterly along the east line of the right-of-way of the Illinois Central railroad, to the center line of E. Seventy-ninth street; thence east along the center line of E. Seventy-ninth street, to the center line of S. Stony Island avenue; thence south along the center line of S. Stony Island avenue, to a line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street; thence east along said line one hundred and twenty-five feet south of the south line of E. Seventy-ninth street, to the shore of Lake Michigan; thence northwesterly along the shore of Lake Michigan to the point of beginning.

(f) All that territory bounded on the north by the center line of W. Sixtieth street, on the south by the center line of W. Sixty-fifth street, on the west by the center line of S. Harlem avenue, on the east by the center line of S. Narragansett avenue.

(g) All that territory bounded on the north by the center line of E. One hundred and eighth street; on the south by the center line of E. One hundred and ninth street; on the west by a line one hundred and twenty-five feet west of the west line of S. Buffalo avenue; on the east by a line one hundred and twenty-five feet west of the west line of S. Avenue L.

(h) All that territory bounded on the north by the center line of E. One hundred and fourteenth street; on the south by the center line of E. One hundred and eighteenth street; on the west by a line one hundred and twenty-five feet west of the west line of S. Buffalo avenue; on the east by a line one hundred and twenty-five feet east of the east line of S. Avenue O. [Amend. Coun. J. 7-11-40, p. 2785; 2-5-41, p. 4221; 2-5-41, p. 4261; 4-23-41, p. 4648.]

89-4. The superintendent of maps shall prepare or cause to be prepared a master map on which shall be accurately indicated the area and boundaries of the fire limits and of the provisional fire limits established by this code. He shall correct said map so as accurately to portray the fire limits and the provisional fire limits whenever a change is made by ordinance, and supply a copy of such corrected map to the commissioner of buildings, the city clerk and the zoning board of appeals.



Note:

Boundaries of Fire Limits run along Center Lines of Streets unless otherwise indicated.—

Where a Boundary is marked as being a certain distance from a Street, it is understood that it runs parallel thereto, and that the distance is measured from the nearest line of such Street; as

For Example: 125 ft. N. of Belmont Av. means: 'Parallel to and 125 ft. N. of N. line of Belmont Av.' etc.

Where the Boundary runs along a Railway, it is understood to be the Railway's Right of Way line as indicated.

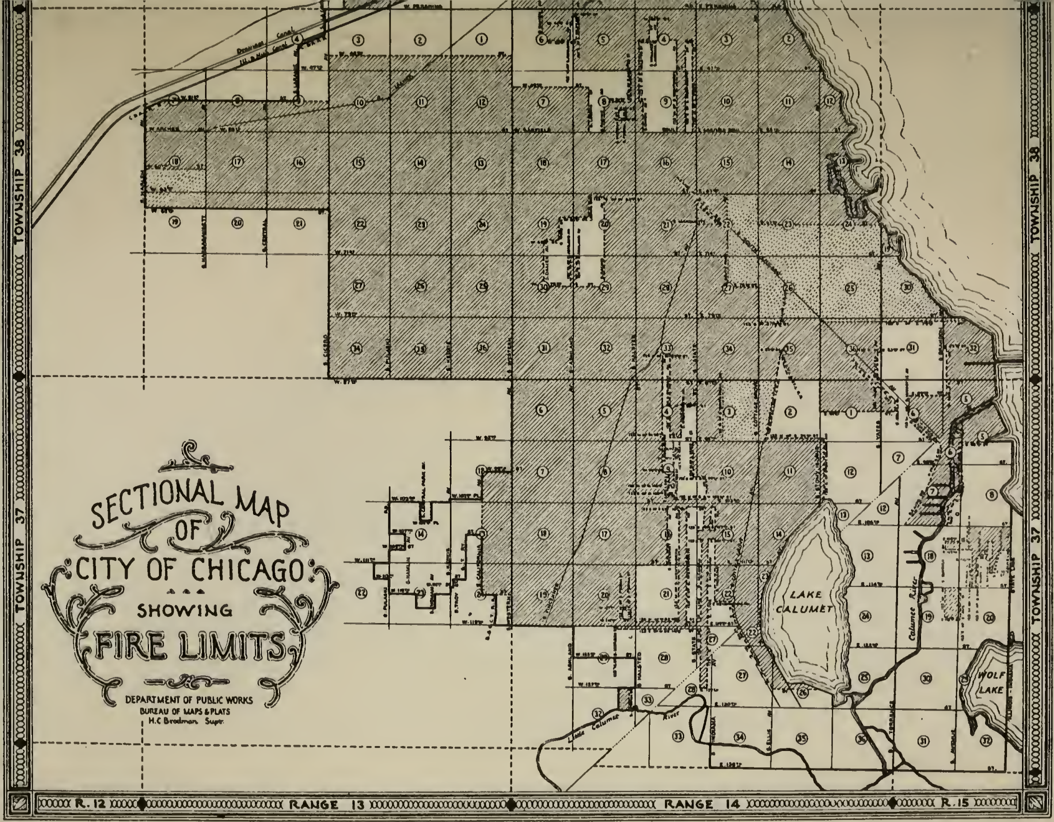
For Example: NE line of L.S. & M.S. means: N.E. line of L.S. & M.S. Railway Right of Way.

Section Numbers shown within Circles

FIRE LIMITS ACCORDING TO ORDINANCE PASSED JAN. 25 - 1939 ARE SHOWN THUS:

▨ Absolute Fire Limits ░ Provisional Fire Limits

AMENDMENTS: Dec. 21-1939,- May 15-1940,- May 22-1940; June 5-1940; July 11-1940,- Dec. 3-1940, Feb. 5-1941, Apr. 23-1941


SECTIONAL MAP
OF
CITY OF CHICAGO
SHOWING
FIRE LIMITS
DEPARTMENT OF PUBLIC WORKS
BUREAU OF MAPS & PLATS
H.C Brodman Supt.
TOWNSHIP 38
TOWNSHIP 37
R. 12
RANGE 13
RANGE 14
R. 15
LAKE CALUMET
WOLF LAKE
Calumet River
Little Calumet River
Drainage Canal
Ill. & Mich. Canal

UNIVERSITY OF ILLINOIS-URBANA
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